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50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Endangered Status for the Alabama Pearlshell, Round Ebonyshell, Southern Sandshell, Southern Kidneyshell, and Choctaw Bean, and Threatened Status for the Tapered Pigtoe, Narrow Pigtoe, and Fuzzy Pigtoe; with Critical Habitat; Proposed Rule

DEPARTMENT OF THE INTERIOR

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[FWS–R4–ES–2011–0050; MO 92210–0–0008–B2]

RIN 1018–AW92

Endangered and Threatened Wildlife and Plants; Endangered Status for the Alabama Pearlshell, Round Ebonyshell, Southern Sandshell, Southern Kidneyshell, and Choctaw Bean, and Threatened Status for the Tapered Pigtoe, Narrow Pigtoe, and Fuzzy Pigtoe; With Critical Habitat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service, propose to list the Alabama pearlshell (*Margaritifera marrianae*), round ebonyshell (*Fusconaia rotulata*), southern sandshell (*Hamiota australis*), southern kidneyshell (*Ptychobranchus jonesi*), and Choctaw bean (*Villosa choctawensis*) as endangered, and the tapered pigtoe (*Fusconaia burkei*), narrow pigtoe (*Fusconaia escambia*), and fuzzy pigtoe (*Pleurobema strodeanum*) as threatened, under the Endangered Species Act of 1973, as amended (Act).

These eight species are endemic to portions of the Escambia River, Yellow River, and Choctawhatchee River basins of Alabama and Florida; and to localized portions of the Mobile River Basin in Alabama. These mussel species have disappeared from other portions of their natural ranges primarily due to habitat deterioration and poor water quality as a result of excessive sedimentation and environmental contaminants.

We are also proposing to designate critical habitat under the Act for these eight species. In total, approximately 2,406 (kilometers (km) (1,495) miles (mi)) of stream and river channels fall within the boundaries of the proposed critical habitat designation. The proposed critical habitat is located in Bay, Escambia, Holmes, Jackson, Okaloosa, Santa Rosa, Walton, and Washington Counties, FL; and Barbour, Bullock, Butler, Coffee, Conecuh, Covington, Crenshaw, Dale, Escambia, Geneva, Henry, Houston, Monroe, and Pike Counties, Alabama.

These proposals, if made final, would implement Federal protection provided by the Act.

DATES: We will accept comments received or postmarked on or before December 5, 2011. We must receive requests for public hearings, in writing, at the address shown in the **ADDRESSES** section by November 18, 2011.

ADDRESSES: You may submit comments by one of the following methods:

(1) *Electronically:* Go to the Federal eRulemaking Portal: *http://www.regulations.gov.* In the Keyword box, enter Docket No. FWS–R4–ES–2011–0050, which is the docket number for this rulemaking. Then, in the Search panel on the left side of the screen, under the Document Type heading, click on the Proposed Rules link to locate this document. You may submit a comment by clicking on ''Send a Comment or Submission.''

(2) *By hard copy:* Submit by U.S. mail or hand-delivery to: Public Comments Processing, Attn: FWS–R4–ES–2011–0050; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, MS 2042–PDM; Arlington, VA 22203.

We will not accept e-mail or faxes. We will post all comments on *http://www.regulations.gov.* This generally means that we will post any personal information you provide us (see the Public Comments section below for more information).

FOR FURTHER INFORMATION CONTACT: Don Imm, Field Supervisor, U.S. Fish and Wildlife Service, Panama City, FL, Fish and Wildlife Office, 1601 Balboa Avenue, Panama City, FL 32405; telephone 850–769–0552; facsimile 850–763–2177. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION: This document consists of: (1) A proposed rule to list the Alabama pearlshell (*Margaritifera marrianae*), round ebonyshell (*Fusconaia rotulata*), southern sandshell (*Hamiota australis*), southern kidneyshell (*Ptychobranchus jonesi*), and Choctaw bean (*Villosa choctawensis*) as endangered, and the tapered pigtoe (*Fusconaia burkei*), narrow pigtoe (*Fusconaia escambia*), and fuzzy pigtoe (*Pleurobema strodeanum*) as threatened; and (2) proposed critical habitat designations for the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe.

Information Requested

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments or information from the public, other concerned governmental agencies, the scientific community, industry, or any other interested parties concerning this proposed rule. We particularly seek comments concerning:

(1) Biological, commercial trade, or other relevant data concerning any threats (or lack thereof) to these species and regulations that may be addressing those threats.

(2) Additional information concerning the historical and current status, range, distribution, and population size of any of these species, including the locations of any additional populations.

(3) Any information on the biological or ecological requirements of these species, and ongoing conservation measures for the species and their habitat.

(4) Current or planned activities in the areas occupied by these species and possible impacts of these activities on these species.

(5) The reasons why we should or should not designate habitat as ''critical habitat'' under section 4 of the Act (16 U.S.C. 1531 *et seq.*) including whether there are threats to these species from human activity, the degree of which can be expected to increase due to the designation, and whether that increase in threat outweighs the benefit of designation such that the designation of critical habitat may not be prudent.

(6) Specific information on:

(a) The amount and distribution of habitat for these eight mussels;

(b) What areas, that were occupied at the time of listing (or are currently occupied) and that contain features essential to the conservation of these species, should be included in the designation and why;

(c) Special management considerations or protection that may be needed in critical habitat areas we are proposing, including managing for the potential effects of climate change; and

(d) What areas not occupied at the time of listing are essential for the conservation of these species and why.

(7) Land use designations and current or planned activities in the subject areas and their possible impacts on proposed critical habitat.

(8) Information on the projected and reasonably likely impacts of climate change on these species and proposed critical habitat.

(9) Any probable economic, national security, or other relevant impacts of designating any area that may be included in the final designation; in particular, any impacts on small entities or families, and the benefits of including

or excluding areas that exhibit these impacts.

(10) Whether any specific areas we are proposing for critical habitat designation should be considered for exclusion under section 4(b)(2) of the Act, and whether the benefits of potentially excluding any specific area outweigh the benefits of including that area under section 4(b)(2) of the Act.

(11) Whether we could improve or modify our approach to designating critical habitat in any way to provide for greater public participation and understanding, or to better accommodate public concerns and comments.

Please note that submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, will not be considered in making a determination, as section 4(b)(1)(A) of the Act directs that determinations as to whether any species is a threatened or endangered species must be made ''solely on the basis of the best scientific and commercial data available.''

You may submit your comments and materials concerning this proposed rule by one of the methods listed in **ADDRESSES**.

If you submit information via *http://www.regulations.gov,* your entire submission—including any personal identifying information—will be posted on the Web site. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on *http://www.regulations.gov.* Please include sufficient information with your comments to allow us to verify any scientific or commercial information you include.

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on *http://www.regulations.gov,* or by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Panama City, FL, Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Previous Federal Actions

The Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe were first identified as candidates for protection under the Act in the May 4, 2004, **Federal Register** (69 FR 24876). Candidate species are assigned Listing Priority Numbers (LPNs) based on immediacy and the magnitude of threat, as well as their taxonomic status. The lower the LPN, the higher priority that species is for us to determine appropriate action using our available resources. In the 2004, 2005 (70 FR 24870), 2006 (71 FR 53756), 2007 (72 FR 69034), 2008 (73 FR 75176), 2009 (74 FR 57869), and 2010 (75 FR 69221) **Federal Register** Candidate Notices of Review, the Alabama pearlshell, round ebonyshell, and southern kidneyshell were identified as LPN 2 candidate species; the narrow pigtoe, southern sandshell, fuzzy pigtoe, and Choctaw bean were identified as LPN 5 candidate species; and the tapered pigtoe was identified as an LPN 11 candidate species. In our Notices of Review, we determined that publication of a proposed rule to list these species was precluded by our work on higher priority listing actions. These eight species were included in a listing petition filed by the Center for Biological Diversity on April 20, 2010. In a separate action, we found the petition presented substantial information that the species may be warranted for listing. Because we have already made the equivalent 12-month finding on these species through our annual candidate assessment and notice process, we have also made a determination that the species warrant listing. Therefore, we have made the requisite findings with regards to the April 20, 2010, petition.

Background

It is our intent to discuss only those topics directly relevant to the listing of the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, and Choctaw bean as endangered; and the tapered pigtoe, narrow pigtoe and fuzzy pigtoe as threatened in this section of the proposed rule. For information relevant to the designation of critical habitat, see ''Critical Habitat'' section below.

Introduction

North American freshwater mussel fauna is the richest in the world and historically numbered around 300 species (Williams *et al.* 1993, p. 6). Freshwater mussels are in decline, however, and in the past century have become more imperiled than any other group of organisms (Williams *et al.* 2008, p. 55; Natureserve 2011). Approximately 66 percent of North America's freshwater mussel species are considered vulnerable to extinction or possibly extinct (Williams *et al.* 1993, p. 6). Within North America, the southeastern United States is the hot spot for mussel diversity. Seventy-five percent of southeastern mussel species are in varying degrees of rarity or possibly extinct (Neves *et al.* 1997, pp. 47–51). The central reason for the decline of freshwater mussels is the modification and destruction of their habitat, especially from sedimentation, dams, and degraded water quality (Neves *et al.* 1997, p. 60; Bogan 1998, p. 376). These eight mussels, like many other southeastern mussel species, have undergone reductions in total range and population density.

These eight species are all freshwater bivalve mussels of the families Margaritiferidae and Unionidae. The Alabama pearlshell is a member of the family Margaritiferidae, while the round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe belong to the family Unionidae. These mussels are endemic to portions of three Coastal Plain rivers that drain south-central and southeastern Alabama and northwestern Florida: the Escambia (known as the Escambia River in Florida and the Conecuh River in Alabama), the Yellow, and the Choctawhatchee. All three rivers originate in Alabama and flow across the Florida panhandle before emptying into the Gulf of Mexico, and are entirely contained within the East Gulf Coastal Plain Physiographic Region. The Alabama pearlshell is also known from three locations in the Mobile River Basin; however, only one of those is considered to be currently occupied.

General Biology

Freshwater mussels generally live embedded in the bottom of rivers, streams, and other bodies of water. They siphon water into their shells and across four gills that are specialized for respiration and food collection. Food items include detritus (disintegrated organic debris), algae, diatoms, and bacteria (Strayer *et al.* 2004, pp. 430–431). Adults are filter feeders and generally orient themselves on or near the substrate surface to take in food and oxygen from the water column. Juveniles typically burrow completely beneath the substrate surface and are pedal (foot) feeders (bringing food particles inside the shell for ingestion that adhere to the foot while it is extended outside the shell) until the structures for filter feeding are more fully developed (Yeager *et al.* 1994, pp. 200–221; Gatenby *et al.* 1996, p. 604).

Sexes in margaritiferid and unionid mussels are usually separate. Males release sperm into the water column, which females take in through their

siphons during feeding and respiration. Fertilization takes place inside the shell. The eggs are retained in the gills of the female until they develop into mature larvae called glochidia. The glochidia of most freshwater mussel species, including all eight species addressed in this rule, have a parasitic stage during which they must attach to the gills, fins, or skin of a fish to transform into a juvenile mussel. Depending on the mussel species, females release glochidia either separately, in masses known as conglutinates, or in one large mass known as a superconglutinate. The duration of the parasitic stage varies by mussel species, water temperature, and perhaps host fish species. When the transformation is complete, the juvenile mussels drop from their fish host and sink to the stream bottom where, given suitable conditions, they grow and mature into adults.

Survey Data

Recent distributions are based on surveys conducted from 1995 to 2011, and historical distributions are based on collections made prior to 1995. Historical distribution data from museum records and surveys dated between the late 1800s and 1994 are sparse, and most of these species were more than likely present throughout their respective river basins. Knowledge of historical and current distribution and abundance data were summarized from Butler 1989; Williams *et al.* 2000 (unpublished), Blalock-Herod *et al.* 2002, Blalock-Herod *et al.* 2005, Pilarczyk *et al.* 2006, and Gangloff and Hartfield 2009). These studies represent a compilation of museum records and recent status surveys conducted between 1990 and 2007. We also used various other sources to identify the historical and current locations occupied by these species. These include surveys, reports, and field notes prepared by biologists from the Alabama Department of Conservation and Natural Resources, Marion, AL; Geological Survey of Alabama, Tuscaloosa, AL; Florida Fish and Wildlife Conservation Commission, Gainesville, FL; U.S. Geological Survey, Gainesville, FL; Alabama Malacological Research Center, Mobile, AL; Troy University, Troy, AL; Appalachian State University, Boone, NC; various private consulting groups; and the U.S. Fish and Wildlife Service, Daphne, AL, and Panama City, FL. In addition, we obtained occurrence data from the collection databases of the Museum of Fluviatile Mollusks (MFM), Athearn collection; Auburn University Natural History Museum (AUNHM), Auburn, Alabama; and Florida Museum of Natural History (FLMNH), Gainesville, FL.

Assessing Status

Assessing the state of a freshwater mussel population is challenging. We looked at trends in distribution (range) and abundance (numbers), by comparing recent occurrence data to historical data. One difficulty of investigating temporal trends in these eight species is the lack of historical collection data within the drainages, particularly in the lower portion of the main channels. Athearn (1964, p. 134) noted the streams of western Florida were inadequately sampled, particularly the lower Choctawhatchee, Yellow, and the lower Escambia Rivers. Blalock-Herod *et al.* (2005, p. 2) stated that little collecting effort had been expended in the Choctawhatchee River drainage as compared to other nearby river systems like the Apalachicola and Mobile River drainages. This paucity of historical occurrence data may create the appearance of an increase in the number of localities or a larger range than historically; however, this is most likely due to increased sampling efforts. We also considered each species' relative abundance in comparison to other mussel species with which they co-occur. In addition, we relied on various published documents whose authors are considered experts on these species. These publications either described the status of these species or assigned a conservation ranking, and include Williams *et al.* 1993, Garner *et al.* 2004, Blalock-Herod *et al.* 2005, and Williams *et al.* 2008.

Most of the eight species have experienced a decline in populations and numbers of individuals within populations, but not all have experienced a decline in range. Recent, targeted surveys for the Alabama pearlshell and southern kidneyshell show a dramatic decline in historical range. The southern sandshell, Choctaw bean, narrow pigtoe, fuzzy pigtoe and tapered pigtoe still occur in much of their historical range; however, their current range is fragmented and their numbers appear to be declining.

Taxonomy, Life History, and Distribution

Alabama Pearlshell

The Alabama pearlshell (*Margaritifera marrianae,* Johnson 1983) is a medium-sized freshwater mussel known from a few tributaries of the Alabama and Escambia River drainages in south-central Alabama (Johnson 1983, pp. 299–304; Mirarchi *et al.* 2004, p. 40; Williams *et al.* 2008, pp. 98–99). The pearlshell is oblong and grows up to 95 millimeters (mm) (3.8 inches (in)) in length. The outside of the shell (periostracum) is smooth and shiny and somewhat roughened along the posterior slope. The inside of the shell (nacre) is whitish or purplish and moderately iridescent (refer to Johnson 1983 for a full description).

The Alabama pearlshell is one of five North American species in the family Margaritiferidae. The family is represented by only two genera, *Margaritifera* (Schumacher 1816) and *Cumberlandia* (Ortmann 1912). In Alabama, each genus is represented by a single species. The spectaclecase (*Cumberlandia monodonta*) occurs in the Tennessee River Basin (Williams *et al.* 2008, pp. 94–95) and the Alabama pearlshell occurs in the Escambia and Alabama River basins in lower Alabama. Prior to 1983, the Alabama pearlshell was thought to be the same species as the Louisiana pearlshell (*Margaritifera hembeli* Conrad 1838) (Simpson 1914; Clench and Turner 1956), a species now considered endemic to central Louisiana.

The Alabama pearlshell typically inhabits small headwater streams with mixed sand and gravel substrates, occasionally in sandy mud, with slow to moderate current. Very little is known about the life-history requirements of this species. However, Shelton (1995, p. 5 unpub. data) suggests that the Alabama pearlshell, as opposed to the Louisiana pearlshell, which occurs in large colonies, typically occurs in low numbers. The Alabama pearlshell is also believed to occur in male-female pairs. Of the 68 Alabama pearlshell observed by Shelton (1995, p. 5 unpub. data), 85 percent occurred in pairs. Males were always located upstream of the females and were typically not more than 1 meter (m) apart, and juveniles were usually found just a few inches apart. The species is believed to be a long-term brooder, where gravid females have been observed in December. The host fish and other aspects of its life history are currently unknown.

Historically, the Alabama pearlshell occurred in portions of the Escambia River drainage, and has also been reported from two systems in the Alabama River drainage. The Alabama pearlshell's known historical and current occurrences, by water body and county, are shown in Table 1 below.

TABLE 1—KNOWN HISTORICAL AND CURRENT OCCURRENCES OF ALABAMA PEARLSHELL

Water body	Drainage	County	State	Historical or current
Big Flat Creek	Alabama	Monroe	AL	Historical and Current.
Brushy Creek	Alabama	Monroe	AL	Historical.
Limestone Creek	Alabama	Monroe	AL	Historical.
Amos Mill Creek	Escambia	Conecuh	AL	Current.
Autrey Creek	Escambia	Conecuh	AL	Historical.
Beaver Creek	Escambia	Conecuh	AL	Historical.
Bottle Creek	Escambia	Conecuh	AL	Historical and Current.
Brushy Creek	Escambia	Conecuh	AL	Historical.
Burnt Corn Creek	Escambia	Conecuh	AL	Historical and Current.
Horse Creek	Escambia	Crenshaw	AL	Historical.
Hunter Creek	Escambia	Conecuh	AL	Historical and Current.
Jordan Creek	Escambia	Conecuh	AL	Historical and Current.
Little Cedar Creek	Escambia	Conecuh	AL	Historical and Current.
Murder Creek	Escambia	Conecuh	AL	Historical.
Otter Creek	Escambia	Conecuh	AL	Historical and Current.
Sandy Creek	Escambia	Conecuh	AL	Historical and Current.

The Amos Mill population, discovered in 2010, represents a new record, and possibly the only known surviving population in the Sepulga River drainage. The Burnt Corn and Otter Creek populations reaffirm historical records that had not been reported in nearly 30 years. Two of the Sandy Creek locations, discovered in 2011, are new populations. Since the late 1990's, more than 70 locations within the Alabama River Basin were surveyed for mollusks (McGregor *et al.* 1999, pp. 13–14; Powell and Ford 2010 pers. obs.; Buntin 2011 pers. comm.; Fobian 2011 pers. comm.), 35 of which were located in the Limestone and Big Flat Creek drainages, and no live Alabama pearlshell were reported. The last documented occurrence in Big Flat Creek was a fresh dead individual collected in 1995 (Shelton 1995, p. 3 unpub. data), and the last reported occurrence in the Limestone Creek drainage was 1974 where Williams (2009 pers. comm.) reported it as common. Despite numerous visits, the pearlshell has not been collected in this system since 1974. A fresh dead individual, collected by Shelton (1998), represents the most recent record from the Big Flat Creek drainage.

Recent data suggest that, of the nine remaining populations, the largest populations may occur in Little Cedar and Otter Mill Creeks. In 2011, Fobian and Pritchett reported new populations at two locations in an unnamed tributary to Sandy Creek. Although this is not the first report from the Sandy Creek basin, it is, however, the first for the two unnamed tributaries. In 2010, Buntin and Fobian (2011 pers. comm.) reported 10 live individuals from Otter Creek. This is the first time since 1981 that the pearlshell has been reported from this drainage. Also in 2010, Powell and Ford reported 3 individuals, and several relic shells, from Amos Mill Creek, in Escambia County, AL. This is the first report of the pearlshell from this drainage, and county, and the first live individual from the Sepulga River system in nearly 50 years. Little Cedar Creek supported good numbers of Alabama pearlshell in the late 1990's (54 individuals reported in 1998). However, during a qualitative search of the same area in 2005, only two live pearlshell were found (Powell 2005 pers. obs.), and in 2006, three live pearlshells were observed (Johnson 2006 in litt.). Live Alabama pearlshell have not been observed in Hunter Creek since 1998, when eight live individuals were reported (Shelton 1998 pers. comm.). During two visits to the stream in 1999, Shelton found no evidence of the species (Shelton 1999 in litt.), and reported high levels of sedimentation. However, in 2005 the shells of three fresh dead Alabama pearlshells were reported from Hunter Creek, indicating the persistence of the species in that drainage (Powell, pers. obs. 2005).

Evidence suggests that much of the rangewide decline of this species has occurred within the past few decades. Specific causes of the decline and disappearance of the Alabama pearlshell from historical stream localities are unknown. However, they are likely related to past and present land use patterns. Many of the small streams historically inhabited by the Alabama pearlshell are impacted to various degrees by nonpoint-source pollution.

Round Ebonyshell

The round ebonyshell (*Fusconaia rotulata,* Wright 1899) is a medium-sized freshwater mussel endemic to the Escambia River drainage in Alabama and Florida (Williams *et al.* 2008, p. 320). The round ebonyshell is round to oval in shape and reaches about 70 mm (2.8 in.) in length. The shell is thick and the outside is smooth and dark brown to black in color. The shell interior is white to silvery and iridescent (Williams and Butler 1994, p. 61; Williams *et al.* 2008, p. 319). The round ebonyshell was originally described by B. H. Wright in 1899 and placed in the genus *Unio.* Simpson (1900) reexamined the type specimen and assigned it to the genus *Obovaria.* Based on shell characters, Williams and Butler (1994, p. 61) recognized it as clearly a species of the genus *Fusconaia,* and its placement in the genus is supported genetically (Lydeard *et al.* 2000, p. 149).

Very little is known about the habitat requirements or life history of the round ebonyshell. It occurs typically in stable substrates of sand, small gravel, or sandy mud in slow to moderate current. It is believed to be a short-term brooder, and gravid females have been observed in the spring and summer. The fish host(s) for the round ebonyshell is currently unknown (Williams *et al.* 2008, p. 320).

The round ebonyshell is known only from the main channel of the Escambia-Conecuh River and is the only mussel species endemic to the drainage (Williams *et al.* 2008, p. 320). Due to recent survey data, its known range was extended downstream the Escambia River to near Mystic Springs in Florida (Shelton *et al.* 2007, p. 9 unpub. data), and upstream the Conecuh River to just above the Covington County line in Alabama (Williams *et al.* 2008, p. 320). The round ebonyshell's known historical and current occurrences, by water body and county, are shown in Table 2 below.

TABLE 2—KNOWN HISTORICAL AND CURRENT OCCURRENCES OF THE ROUND EBONYSHELL

Water body	Drainage	County	State	Historical or current
Conecuh River	Escambia	Escambia, Covington	AL	Historical and Current.
Escambia River	Escambia	Escambia, Santa Rosa	FL	Historical and Current.

The round ebonyshell has one of the most restricted distributions of any North American unionid (Williams and Butler 1994, p. 61). Its current range (based on live individuals and shell material) is confined to approximately 120 km (75 mi) of river channel. The round ebonyshell is also extremely rare (Williams *et al.* 2008, p. 320). Researchers collected a total of three live individuals during a 2006 status survey (Shelton *et al.* 2007, pp. 8–10 unpub. data). At stations where the species was present, roughly 950 mussels were collected for every 1 round ebonyshell. Its limited distribution and small population size makes round ebonyshell particularly vulnerable to catastrophic events such as droughts, flood scour, and contaminant spills. Due to its limited distribution and rarity, Garner *et al.* (2004, p. 56) considered the round ebonyshell vulnerable to extinction, and classified it as a species of highest conservation concern in Alabama. Williams *et al.* (1993, p. 11) considered the round ebonyshell as endangered throughout its range.

Southern Sandshell

The southern sandshell (*Hamiota australis,* Simpson 1900) is a medium-sized freshwater mussel known from the Escambia River drainage in Alabama, and the Yellow and Choctawhatchee River drainages in Alabama and Florida (Williams *et al.* 2008, p. 338). The southern sandshell is elliptical in shape and reaches about 83 mm (2.3 in.) in length. Its shell is smooth and shiny, and greenish in color in young specimens, becoming dark greenish brown to black with age, with many variable green rays. The shell interior is bluish white and iridescent. Sexual dimorphism is present as a slight inflation of the posterioventral shell margin of females (Williams and Butler 1994, p. 97; Williams *et al.* 2008, p. 337). The southern sandshell (*Hamiota australis*) was originally described by C. T. Simpson (1900) as *Lampsilis australis.* Heard (1979), however, designated it as a species of *Villosa.* It was placed in the genus *Hamiota* by Roe and Hartfield (2005, pp. 1–3) who confirmed earlier published suggestions by Fuller and Bereza (1973, p. 53) and O'Brien and Brim Box (1999, pp. 135–136) that this species and three others of the genus *Lampsilis* represent a distinct genus. This separation from other *Lampsilis* is supported genetically (Roe *et al.* 2001, p. 2230). The new genus, *Hamiota,* is distinguished based on several characters including unique shape and placement of the marsupia (where females brood developing larvae), and production of a single large conglutinate, termed a superconglutinate.

The southern sandshell is typically found in small creeks and rivers in stable substrates of sand or mixtures of sand and fine gravel, with slow to moderate current. It is a long-term brooder, and females are gravid from late summer or autumn to the following spring (Williams *et al.* 2008, p. 338). The southern sandshell is one of only four species that produce a superconglutinate to attract a host. A superconglutinate is a mass that mimics the shape, coloration, and movement of a fish and is produced by the female mussel to hold the glochidia (larval mussels) from one year's reproductive effort (Haag *et al.* 1995, p. 472). After release, the superconglutinate is tethered to the female mussel by a mucus strand, and it appears to dart and swim in the current. Although the fish host for the southern sandshell has not been identified, it likely uses predatory sunfishes such as basses, like other *Hamiota* species (Haag *et al.* 1995, p. 475; O'Brien and Brim Box 1999, p. 134; Blalock-Herod *et al.* 2002, p. 1885).

The southern sandshell is endemic to the Escambia River drainage in Alabama, and the Yellow and Choctawhatchee River drainages in Alabama and Florida (Blalock–Herod *et al.* 2002, pp. 1882, 1884). The southern sandshell's known historical and current occurrences, by water body and county, are shown in Table 3 below.

TABLE 3—KNOWN HISTORICAL AND CURRENT OCCURRENCES OF THE SOUTHERN SANDSHELL

Water body	Drainage	County	State	Historical or current
Alligator Creek	Choctawhatchee	Washington	FL	Historical.
Bruce Creek	Choctawhatchee	Walton	FL	Current.
Choctawhatchee River	Choctawhatchee	Geneva	AL	Historical.
Choctawhatchee River	Choctawhatchee	Holmes, Dale	FL, AL	Historical and Current.
Corner Creek	Choctawhatchee	Geneva	AL	Current.
Double Bridges Creek	Choctawhatchee	Coffee	AL	Current.
East Fork Choctawhatchee R.	Choctawhatchee	Henry	AL	Historical and Current.
East Fork Choctawhatchee R.	Choctawhatchee	Dale	AL	Historical.
Eightmile Creek	Choctawhatchee	Walton, Geneva	FL, AL	Current.
Flat Creek	Choctawhatchee	Geneva	AL	Current.
Holmes Creek	Choctawhatchee	Holmes	FL	Historical.
Jordan Creek	Choctawhatchee	Conecuh	AL	Current.
Limestone Creek	Choctawhatchee	Walton	FL	Historical.
Little Choctawhatchee River	Choctawhatchee	Dale, Houston	AL	Historical.
Natural Bridge Creek	Choctawhatchee	Geneva	AL	Current.
Patsaliga Creek	Choctawhatchee	Crenshaw	AL	Current.
Pauls Creek	Choctawhatchee	Barbour	AL	Current.
Pea Creek (Barbour Co.)	Choctawhatchee	Barbour	AL	Historical and Current.
Pea Creek (Dale Co.)	Choctawhatchee	Dale	AL	Historical.
Pea River	Choctawhatchee	Geneva, Barbour	AL	Historical.
Pea River	Choctawhatchee	Coffee, Dale, Pike	AL	Historical and Current.
Sikes Creek	Choctawhatchee	Barbour	AL	Current.

TABLE 3—KNOWN HISTORICAL AND CURRENT OCCURRENCES OF THE SOUTHERN SANDSHELL—Continued

Water body	Drainage	County	State	Historical or current
Tenmile Creek	Choctawhatchee	Holmes	FL	Historical.
West Fork Choctawhatchee R.	Choctawhatchee	Barbour, Dale	AL	Historical and Current.
Whitewater Creek	Choctawhatchee	Coffee	AL	Historical.
Wrights Creek	Choctawhatchee	Holmes	FL	Current.
Burnt Corn Creek	Escambia	Escambia, Conecuh	AL	Historical.
Conecuh River	Escambia	Pike	AL	Current.
Conecuh River	Escambia	Covington, Crenshaw	AL	Historical.
Little Patsaliga Creek	Escambia	Crenshaw	AL	Historical.
Sepulga River	Escambia	Conecuh	AL	Historical.
Five Runs Creek	Yellow	Covington	AL	Historical and Current.
Pond Creek	Yellow	Okaloosa, Walton	FL	Historical.
Shoal River	Yellow	Okaloosa	FL	Current.
Yellow River	Yellow	Okaloosa	FL	Current.
Yellow River	Yellow	Covington	AL	Historical and Current.

The southern sandshell persists in its historical range; however, its range is fragmented and numbers appear to be declining (Williams *et al.* 2008, p. 338). The number of locations in the Escambia drainage known to support the species has declined. It is known from a total of nine locations, however, only three are recent occurrences. Also, its numbers are very low; a total of four individuals (live and shell material) have been collected in the Escambia drainage since 1995. In the Yellow River drainage, the number of locations known to support southern sandshell populations has declined from a total of 15 to 10 currently. The number of locations known to support the species in the Choctawhatchee River drainage has declined from 44 to 25 currently; and it may be extirpated from central portions of the Choctawhatchee River main channel and from some of its tributaries. Sedimentation could be one factor contributing to its decline. In order to reproduce, the southern sandshell must attract a site-feeding fish to its superconglutinate lure. Waters clouded by silt and sediment would reduce the chance of this interaction occurring (Haag *et al.* 1995, p. 475).

The southern sandshell is classified as a species of highest conservation concern in Alabama by Garner *et al.* (2004, p. 60), and considered threatened throughout its range by Williams *et al.* (1993, p. 11).

Southern Kidneyshell

The southern kidneyshell (*Ptychobranchus jonesi,* van der Schalie 1934) is a medium-sized freshwater mussel known from the Escambia and Choctawhatchee River drainages in Alabama and Florida, and the Yellow River drainage in Alabama (Williams *et al.* 2008, p. 624). The southern kidneyshell is elliptical and reaches about 72 mm (2.8 in.) in length. Its shell is smooth and shiny, and greenish yellow to dark brown or black in color, sometimes with weak rays. The shell interior is bluish white with some iridescence (Williams and Butler 1994, p. 126; Williams *et al.* 2008, p. 624). The southern kidneyshell was described by H. van der Schalie (1934) as *Lampsilis jonesi.* Following the examination of gills of gravid females, Fuller and Bereza (1973, p. 53) determined it belonged in the genus *Ptychobranchus.* When gravid, the marsupial gills form folds along the outer edge, a characteristic unique to the genus *Ptychobranchus* (Williams *et al.* 2008, p. 609).

Very little is known about the habitat requirements or life history of the southern kidneyshell. It is typically found in medium creeks to medium rivers in firm sand substrates with slow to moderate current (Williams *et al.* 2008, pp. 625). A recent status survey in the Choctawhatchee basin in Alabama found its preferred habitat to be stable substrates near bedrock outcroppings (Gangloff and Hartfield 2009, p. 25). The southern kidneyshell is believed to be a long-term brooder, with females gravid from autumn to the following spring or summer. Preliminary reproductive studies found that females release their glochidia in small conglutinates that are bulbous at one end and tapered at the other (Alabama Aquatic Biodiversity Center 2006 unpub. data). Host fish for the southern kidneyshell are currently unknown; however, darters serve as primary glochidial hosts to other members of the genus *Ptychobranchus* (Luo 1993, p. 16; Haag and Warren 1997, p. 580).

The southern kidneyshell is endemic to the Escambia, Choctawhatchee, and Yellow River drainages in Alabama and Florida (Williams *et al.* 2008, p. 624), but is currently known only from the Choctawhatchee drainage. The southern kidneyshell's known historical and current occurrences, by water body and county, are shown in Table 4 below.

TABLE 4—KNOWN HISTORICAL AND CURRENT OCCURRENCES OF THE SOUTHERN KIDNEYSHELL

Water body	Drainage	County	State	Historical or current
Choctawhatchee River	Choctawhatchee	Dale	AL	Historical and Current.
Choctawhatchee River	Choctawhatchee	Walton, Geneva	FL, AL	Historical.
East Fork Choctawhatchee R	Choctawhatchee	Dale, Henry	AL	Historical.
Flat Creek	Choctawhatchee	Geneva	AL	Historical.
Holmes Creek	Choctawhatchee	Washington	AL	Current.
Pea River	Choctawhatchee	Geneva	AL	Current.
Pea River	Choctawhatchee	Pike, Barbour	AL	Historical.
Pea River	Choctawhatchee	Coffee, Dale	AL	Historical and Current.
Sandy Creek	Choctawhatchee	Walton	FL	Historical.
West Fork Choctawhatchee R	Choctawhatchee	Barbour	AL	Historical and Current.
West Fork Choctawhatchee R	Choctawhatchee	Dale	AL	Historical.
Whitewater Creek	Choctawhatchee	Coffee	AL	Historical.

TABLE 4—KNOWN HISTORICAL AND CURRENT OCCURRENCES OF THE SOUTHERN KIDNEYSHELL—Continued

Water body	Drainage	County	State	Historical or current
Burnt Corn Creek	Escambia	Escambia	AL	Historical.
Conecuh River	Escambia	Covington, Crenshaw	AL	Historical.
Jordan Creek	Escambia	Conecuh	AL	Historical.
Little Patsaliga Creek	Escambia	Crenshaw	AL	Historical.
Patsaliga Creek	Escambia	Covington, Crenshaw	AL	Historical.
Sepulga River	Escambia	Conecuh	AL	Historical.
Hollis Creek	Yellow	Covington	AL	Historical.

Since 1995, the southern kidneyshell has been detected at only 10 locations within the Choctawhatchee River drainage. The species appears to have been common historically (In 1964, H. D. Athearn collected 98 individuals at one site on the West Fork Choctawhatchee), but it is currently considered one of the most imperiled species in the United States (Blalock-Herod *et al.* 2005, p. 16; Williams *et al.* 2008, p. 625). In addition to a reduction in range, its population numbers also appear to be very low. A 2006–2007 status survey in the Alabama portions of the Choctawhatchee basin found the southern kidneyshell was extremely rare. A total of 13 were encountered alive, and the species comprised less than 0.3 percent of the total mussel assemblage (Gangloff and Hartfield 2009, p. 249). It is classified as a species of highest conservation concern in Alabama by Garner *et al.* (2004, p. 83), and considered threatened throughout its range by Williams *et al.* (1993, p. 14)

Choctaw Bean

The Choctaw bean (*Villosa choctawensis,* Athearn 1964) is a small freshwater mussel known from the Escambia, Yellow, and Choctawhatchee River drainages of Alabama and Florida. The oval shell of the Choctaw bean reaches about 49 mm (2.0 in.) in length, and is shiny and greenish-brown in color, typically with thin green rays, though the rays are often obscured in darker individuals. The shell interior color varies from bluish white to smoky brown with some iridescence (Williams and Butler 1994, p. 100; Williams *et al.* 2008, p. 758). The sexes are dimorphic, with females truncate or widely rounded posteriorly, and sometimes slightly more inflated (Athearn 1964, p. 137). The Choctaw bean was originally described by H. D. Athearn in 1964.

Very little is known about the habitat requirements or life history of the Choctaw bean. It is found in large creeks and small rivers in stable substrates of silty sand to sandy clay with moderate current. It is believed to be a long-term brooder, with females gravid from late summer or autumn to the following summer. Its fish host is currently unknown (Williams *et al.* 2008, p. 758).

The Choctaw bean is known from the Escambia, Yellow, and Choctawhatchee River drainages in Alabama and Florida (Williams *et al.* 2008, p. 758). The Choctaw bean's known historical and current occurrences, by water body and county, are shown in the table below.

TABLE 5—KNOWN HISTORICAL AND CURRENT OCCURRENCES FOR THE CHOCTAW BEAN

Water body	Drainage	County	State	Historical or current
Big Sandy Creek	Choctawhatchee	Bullock	AL	Current.
Bruce Creek	Choctawhatchee	Walton	FL	Current.
Choctawhatchee River	Choctawhatchee	Dale	AL	Current.
Choctawhatchee River	Choctawhatchee	Holmes	AL	Historical.
Choctawhatchee River	Choctawhatchee	Washington, Geneva	FL, AL	Historical and Current.
Claybank Creek	Choctawhatchee	Dale	AL	Current.
East Fork Choctawhatchee R.	Choctawhatchee	Barbour	AL	Current.
East Fork Choctawhatchee R.	Choctawhatchee	Henry	AL	Historical and Current.
Flat Creek	Choctawhatchee	Geneva	AL	Current.
Holmes Creek	Choctawhatchee	Washington	FL	Current.
Judy Creek	Choctawhatchee	Dale	AL	Current.
Limestone Creek	Choctawhatchee	Walton	FL	Current.
Paul's Creek	Choctawhatchee	Barbour	AL	Current.
Pea Creek	Choctawhatchee	Barbour	AL	Current.
Pea River	Choctawhatchee	Coffee	AL	Current.
Pea River	Choctawhatchee	Geneva, Pike, Barbour	AL	Historical and Current.
West Fork Choctawhatchee R.	Choctawhatchee	Dale	AL	Current.
West Fork Choctawhatchee R.	Choctawhatchee	Pike, Barbour	AL	Historical and Current.
Whitewater Creek	Choctawhatchee	Coffee	AL	Current.
Wrights Creek	Choctawhatchee	Holmes	FL	Current.
Conecuh River	Escambia	Crenshaw, Pike	AL	Current.
Escambia River	Escambia	Santa Rosa	FL	Historical.
Escambia River	Escambia	Escambia	FL	Historical and Current.
Little Patsaliga Creek	Escambia	Crenshaw	AL	Historical.
Murder Creek	Escambia	Conecuh	AL	Historical.
Olustee Creek	Escambia	Pike	AL	Current.
Patsaliga Creek	Escambia	Crenshaw	AL	Historical and Current.
Pigeon Creek	Escambia	Butler	AL	Historical.
Five Runs Creek	Yellow	Covington	AL	Historical and Current.
Yellow River	Yellow	Okaloosa, Covington	FL, AL	Historical and Current.

The Choctaw bean persists in most of its historical range. However, its populations are fragmented and its numbers are low, particularly in the Escambia and Yellow drainages. The number of locations in the Escambia River drainage known to support the species has declined from a total of 13 to 6 currently. Also, its numbers within the drainage are very low; a total of only 10 individuals have been collected since 1995. The number of locations known to support the Choctaw bean in the Yellow River drainage has declined from a total of 7 to 4 currently. Since 1995, a total of 28 individuals have been collected within the Yellow drainage. In the Choctawhatchee River drainage, the Choctaw bean continues to persist in most areas. It is known from a total of 40 locations throughout the drainage, 34 of which are recent occurrences.

Heard assessed the status of the Choctaw bean in 1975 (p. 17) and stated that it was formerly abundant in the main channel of the Choctawhatchee River in Florida, but has become quite rare. Garner *et al.* (2004, p. 103) considered the Choctaw bean vulnerable to extinction due to its limited distribution and habitat degradation, and classified it as a species of high conservation concern in Alabama. Williams *et al.* (1993, p. 14) considered the Choctaw bean as threatened throughout its range.

Tapered Pigtoe

The tapered pigtoe (*Fusconaia burkei,* Walker 1922) is a small to medium-sized mussel endemic to the Choctawhatchee river drainage in Alabama and Florida (Williams *et al.* 2008, p. 296). The elliptical to subtriangular shell of the tapered pigtoe reaches about 75 mm (3.0 in.) in length, and is sculptured with plications (parallel ridges) that radiate from the posterior ridge. In younger individuals, the shell exterior is greenish brown to yellowish brown in color, occasionally with faint dark-green rays, and with pronounced sculpture often covering the entire shell; in older individuals the shell becomes dark brown to black with age and sculpture is often subtle. The shell interior is bluish white (Williams *et al.* 2008, p. 295). The tapered pigtoe was described by B. Walker (1922) (in Ortmann and Walker) as *Quincuncina burkei,* a new genus and species (the genus description was done by A. E. Ortmann and the species description by Walker). In the description, Ortmann noted the species had gill features characteristic of the genus *Fusconaia;* however, this was dismissed based on the presence of sculpture on the shell. Genetic analysis by Lydeard *et al.* (2000, p. 149) determined it to be a sister taxon to *Fusconaia escambia.* Based on genetic results and soft anatomy similarity, Williams *et al.* (2008, p. 296) recognized *burkei* as belonging to the genus *Fusconaia.*

The tapered pigtoe is found in small to medium rivers in stable substrates of sand, small gravel, or sandy mud, with slow to moderate current (Williams *et al.* 2008, p. 296). The reproductive biology of the tapered pigtoe was studied by White *et al.* (2008). It is a short-term brooder, with females gravid from mid-March to May. The blacktail shiner (*Cyprinella venusta*) was found to serve as a host for tapered pigtoe glochidia in the preliminary host trial (White *et al.* 2008, p. 122–123).

The tapered pigtoe is endemic to the Choctawhatchee River drainage in Alabama and Florida (Williams *et al.* 2008, p. 296). Its historical and current distribution includes several oxbow lakes in Florida; some with a flowing connection to main channel. The tapered pigtoe's known historical and current occurrences, by water body and county, are shown in the table below.

TABLE 6—KNOWN HISTORICAL AND CURRENT OCCURRENCES FOR THE TAPERED PIGTOE

Water body	Drainage	County	State	Historical or current
Bear Creek	Choctawhatchee	Houston	AL	Historical.
Big Creek	Choctawhatchee	Barbour	AL	Current.
Blue Creek	Choctawhatchee	Holmes	FL	Current.
Bruce Creek	Choctawhatchee	Walton	FL	Current.
Choctawhatchee River	Choctawhatchee	Dale	AL	Historical.
Choctawhatchee River	Choctawhatchee	Washington, Walton, Holmes.	FL	Historical and Current.
Cowford Island channel	Choctawhatchee	Washington	FL	Historical and Current.
Crawford Lake	Choctawhatchee	Washington	FL	Historical.
Crews Lake	Choctawhatchee	Washington	FL	Current.
East Fork Choctawhatchee R.	Choctawhatchee	Dale	AL	Historical.
East Fork Choctawhatchee R.	Choctawhatchee	Henry	AL	Historical and Current.
East Pittman Creek	Choctawhatchee	Holmes	FL	Historical and Current.
Eightmile Creek	Choctawhatchee	Walton, Geneva	FL, AL	Current.
Flat Creek	Choctawhatchee	Geneva	AL	Historical and Current.
Holmes Creek	Choctawhatchee	Washington, Holmes, Jackson.	FL	Historical and Current.
Horseshoe Lake	Choctawhatchee	Washington	FL	Historical.
Hurricane Creek	Choctawhatchee	Geneva	AL	Historical.
Judy Creek	Choctawhatchee	Dale	AL	Current.
Limestone Creek	Choctawhatchee	Walton	FL	Historical and Current.
Little Choctawhatchee River	Choctawhatchee	Dale, Houston	AL	Historical.
Panther Creek	Choctawhatchee	Houston	AL	Historical.
Parrot Creek	Choctawhatchee	Holmes	FL	Current.
Paul's Creek	Choctawhatchee	Barbour	AL	Current.
Pea Creek	Choctawhatchee	Barbour	AL	Current.
Pea River	Choctawhatchee	Dale, Barbour	AL	Historical.
Pea River	Choctawhatchee	Coffee, Pike	AL	Historical and Current.
Pine Log Creek	Choctawhatchee	Washington, Bay	FL	Current.
Sandy Creek	Choctawhatchee	Walton	FL	Current.
Tenmile Creek	Choctawhatchee	Holmes	FL	Historical.
West Fork Choctawhatchee R.	Choctawhatchee	Dale, Pike	AL	Historical.
West Fork Choctawhatchee R.	Choctawhatchee	Barbour	AL	Historical and Current.
West Pittman Creek	Choctawhatchee	Holmes	FL	Current.

TABLE 6—KNOWN HISTORICAL AND CURRENT OCCURRENCES FOR THE TAPERED PIGTOE—Continued

Water body	Drainage	County	State	Historical or current
Wrights Creek	Choctawhatchee	Holmes	FL	Current.

The tapered pigtoe appears to be absent from portions of its historical range and found only in isolated locations (Blalock-Herod *et al.* 2005, p. 17). The species is known from a total of 60 locations within the Choctawhatchee River drainage. It was not detected at 11 historical sites examined during recent status surveys (9 additional historic locations were not examined). Many of those historic occurrences are in the middle section of the drainage, and the species appears to be declining in that portion of its range. The tapered pigtoe continues to persist in isolated locations, mainly in the Choctawhatchee River main channel in Florida and in the headwaters in Alabama.

Due to its limited distribution, rarity, and habitat degradation, Garner *et al.* (2004, p. 105) consider the tapered pigtoe vulnerable to extinction, and classified it as a species of high conservation concern in Alabama. The tapered pigtoe is considered threatened throughout its range by Williams *et al.* (1993, p. 14).

Narrow Pigtoe

The narrow pigtoe (*Fusconaia escambia,* Clench and Turner 1956) is a small to medium-sized mussel known from the Escambia River drainage in Alabama and Florida, and the Yellow River drainage in Florida. The subtriangular to squarish shaped shell of the narrow pigtoe reaches about 75 mm (3.0 in.) in length. The shell is moderately thick and is usually reddish brown to black in color. The shell interior is white to salmon in color with iridescence near the posterior margin (Williams and Butler 1994, p. 77; Williams *et al.* 2008, p. 316). The narrow pigtoe was originally described by W.J. Clench and R.D. Turner in 1956.

Little is known about the habitat requirements or life history of the narrow pigtoe. It is found in creeks and small to medium rivers in stable substrates of sand, sand and gravel, or silty sand, with slow to moderate current. It is believed to be a short-term brooder, with females gravid during spring and summer. The host fish for the narrow pigtoe is currently unknown (Williams *et al.* 2008, p. 317). The species is somewhat unusual in that it does tolerate a small reservoir environment (Williams 2009 pers. comm.). Reproducing narrow pigtoe populations were found recently in some areas of Point A Lake and Gantt Lake reservoirs.

The narrow pigtoe is endemic to the Escambia River drainage in Alabama and Florida, and to the Yellow River drainage in Florida (Williams *et al.* 2008, p. 317). The narrow pigtoe's known historical and current occurrences, by water body and county, are shown in Table 7 below.

TABLE 7—KNOWN HISTORICAL AND CURRENT OCCURRENCES FOR THE NARROW PIGTOE

Water body	Drainage	County	State	Historical or current
Bottle Creek	Escambia	Conecuh	AL	Historical.
Burnt Corn Creek	Escambia	Conecuh	AL	Current.
Conecuh River	Escambia	Pike	AL	Current.
Conecuh River	Escambia	Escambia, Covington, Crenshaw.	AL	Historical and Current.
Escambia River	Escambia	Escambia, Santa Rosa	FL	Historical and Current.
Murder Creek	Escambia	Conecuh	AL	Historical.
Panther Creek	Escambia	Butler	AL	Historical.
Patsaliga Creek	Escambia	Covington, Crenshaw	AL	Current.
Persimmon Creek	Escambia	Butler	AL	Current.
Three Run Creek	Escambia	Butler	AL	Current.
Yellow River	Yellow	Santa Rosa	FL	Historical.
Yellow River	Yellow	Okaloosa	FL	Historical and Current.

The narrow pigtoe still occurs in much of its historic range, but may be extirpated from localized areas. In the Escambia drainage, the number of locations that support the species has declined from 32 to 24 currently. It was not detected at two historical sites examined recently (four historical sites were not examined) in the drainage. In the Yellow drainage, the number of sites supporting narrow pigtoe populations has declined from four to three currently. The species is rare in the Yellow River drainage; a total of only 23 individuals from 3 locations have been collected since 1995.

Garner *et al.* (2004, p. 55) considered the narrow pigtoe vulnerable to extinction because of its limited distribution, rarity, and susceptibility to habitat degradation, and classified it as a species of highest conservation concern in Alabama. Williams *et al.* (1993, p. 11) considered the narrow pigtoe threatened throughout its range.

Fuzzy Pigtoe

The fuzzy pigtoe (*Pleurobema strodeanum,* Wright (1898) is a small to medium-sized mussel known from the Escambia, Yellow, and Choctawhatchee River drainages in Alabama and Florida (Williams *et al.* 2008, p. 574). The fuzzy pigtoe is oval to subtriangular and reaches about 75 mm (3.0 in.) in length. Its shell surface is usually dark brown to black in color. The shell interior is bluish white, with slight iridescence near the margin (Williams and Butler 1994, p. 90; Williams *et al.* 2008, p. 573). The fuzzy pigtoe was described by B. H. Wright (1898) as *Unio strodeanus.* Simpson (1900) reexamined the type specimen and reassigned it to the genus *Pleurobema.* The uniqueness of the fuzzy pigtoe has been verified by Williams *et al.* (2008, p. 574).

The fuzzy pigtoe is found in medium creeks and rivers in stable substrates of sand and silty sand with slow to moderate current. The reproductive biology of the fuzzy pigtoe was studied by White *et al.* (2008, p. 122–123). It is a short-term brooder, with females

gravid from mid-March to May. The blacktail shiner (*Cyprinella venusta*) was found to serve as a host for fuzzy pigtoe glochidia in the preliminary study trial.

The fuzzy pigtoe is endemic to the Escambia, Yellow, and Choctawhatchee River drainages in Alabama and Florida (Williams *et al.* 2008, p. 574). The fuzzy pigtoe's known historical and current occurrences, by water body and county, are shown in Table 8 below.

TABLE 8—KNOWN HISTORICAL AND CURRENT OCCURRENCES OF THE FUZZY PIGTOE

Water body	Drainage	County	State	Historical or current
Big Sandy Creek	Choctawhatchee	Bullock	AL	Current.
Blue Creek	Choctawhatchee	Holmes	FL	Current.
Choctawhatchee River	Choctawhatchee	Washington, Walton, Holmes, Geneva, Dale.	FL, AL	Historical and Current.
Claybank Creek	Choctawhatchee	Dale	AL	Current.
East Fork Choctawhatchee R.	Choctawhatchee	Dale	AL	Current.
East Fork Choctawhatchee R.	Choctawhatchee	Henry	AL	Historical and Current.
East Pittman Creek	Choctawhatchee	Holmes	FL	Current.
Eightmile Creek	Choctawhatchee	Walton, Geneva	FL, AL	Current.
Flat Creek	Choctawhatchee	Geneva	AL	Current.
Holmes Creek	Choctawhatchee	Holmes, Jackson	FL	Current.
Holmes Creek	Choctawhatchee	Washington	FL	Historical and Current.
Hurricane Creek	Choctawhatchee	Geneva	AL	Current.
Judy Creek	Choctawhatchee	Dale	AL	Current.
Limestone Creek	Choctawhatchee	Walton	FL	Historical.
Little Choctawhatchee River	Choctawhatchee	Dale, Houston	AL	Historical.
Panther Creek	Choctawhatchee	Houston	AL	Historical.
Pauls Creek	Choctawhatchee	Barbour	AL	Current.
Pea Creek	Choctawhatchee	Barbour	AL	Current.
Pea River	Choctawhatchee	Pike, Barbour	AL	Current.
Pea River	Choctawhatchee	Geneva, Coffee, Dale	AL	Historical and Current.
Sandy Creek	Choctawhatchee	Walton	FL	Current.
Steep Head Creek	Choctawhatchee	Coffee	AL	Current.
unnamed trib. to Lindsey Cr.	Choctawhatchee	Barbour	AL	Current.
Walnut Creek	Choctawhatchee	Pike	AL	Current.
West Fork Choctawhatchee R.	Choctawhatchee	Dale, Barbour	AL	Historical and Current.
West Pittman Creek	Choctawhatchee	Holmes	FL	Current.
Wrights Creek	Choctawhatchee	Holmes	FL	Historical and Current.
Bottle Creek	Escambia	Conecuh	AL	Historical and Current.
Burnt Corn Creek	Escambia	Conecuh	AL	Historical and Current.
Conecuh River	Escambia	Escambia, Covington, Crenshaw, Pike.	AL	Historical and Current.
Escambia River	Escambia	Escambia, Santa Rosa	FL	Historical and Current.
Jordan Creek	Escambia	Conecuh	AL	Current.
Little Patsaliga Creek	Escambia	Crenshaw	AL	Historical and Current.
Mill Creek	Escambia	Pike	AL	Historical.
Murder Creek	Escambia	Conecuh	AL	Historical and Current.
Patsaliga Creek	Escambia	Crenshaw	AL	Historical and Current.
Persimmon Creek	Escambia	Butler	AL	Current.
Pigeon Creek	Escambia	Covington	AL	Historical and Current.
Sandy Creek	Escambia	Conecuh	AL	Historical.
Sepulga River	Escambia	Conecuh	AL	Historical.
Yellow River	Yellow	Covington	AL	Historical.
Yellow River	Yellow	Okaloosa	FL	Historical and Current.

Within the Escambia River drainage, the fuzzy pigtoe is historically known from a total of 38 locations. It is currently known from 20 of these locations, however, its status in the Escambia drainage is difficult to assess as 15 of the 18 remaining historical sites have not be surveyed since 1995. The fuzzy pigtoe is exceedingly rare in the Yellow River drainage, where it is known from a total of only five localities. A single individual collected in 2010 in the Florida portion of the main channel is the only recent record of the species in the drainage. Its range in the Yellow drainage has declined, and the species may no longer occur in the Alabama portions of the drainage. In the Choctawhatchee River drainage, the number of locations that support fuzzy pigtoe populations has declined from 61 to 54. At one site on Limestone Creek, a once abundant population may have disappeared: A total of 56 individuals was collected in 1988; only 3 were collected in 1993 by the same collector; and none were collected during site visits at the same location in 1996 and 2011. Although the species still occurs in much of its historic range in the drainage, it may be extirpated from localized areas.

The fuzzy pigtoe is considered vulnerable to extinction because of its limited distribution and dwindling habitat by Garner *et al.* (2004, p. 101), who classified it as a species of high conservation concern in Alabama. Williams *et al.* (1993, p. 11) considered the fuzzy pigtoe a species of special concern throughout its range.

Summary of Factors Affecting the Species

Section 4 of the Act and its implementing regulations at 50 CFR part 424, set forth the procedures for adding species to the Federal List of Endangered and Threatened Wildlife

and Plants. Under section 4(a)(1) of the Act, we may list a species based on any of the following five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; and (E) other natural or manmade factors affecting its continued existence. Listing actions may be warranted based on any of the above threat factors, singly or in combination. Each of these factors is discussed below.

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

The habitats of freshwater mussels are vulnerable to water quality degradation and habitat modification from a number of activities associated with modern civilization. The primary cause of the decline of these eight mussels has been the modification and destruction of their stream and river habitat, with sedimentation as the leading cause. Their stream habitats are subject to pollution and alteration from a variety of sources including adjacent land use activities, effluent discharges, and impoundments.

Nonpoint-source pollution from land surface runoff originates from virtually all land use activities and includes sediments, fertilizer, herbicide and pesticide residues; animal wastes; septic tank leakage and gray water discharge; and oils and greases. Current activities and land uses that can negatively affect populations of these eight mussels include unpaved road crossings, improper silviculture and agriculture practices, highway construction, housing developments, pipeline crossings, and cattle grazing. These activities can result in physical disturbance of stream substrates or the riparian zone, excess sedimentation and nutrification, decreased dissolved oxygen concentration, increased acidity and conductivity, and altered flow. Limited range and low numbers make these eight mussels vulnerable to land use changes that would result in increases in nonpoint-source pollution.

Sedimentation is one of the most significant pollution problems for aquatic organisms (Williams and Butler 1994, p. 55), and has been determined to be a major factor in mussel declines (Ellis 1936, pp. 39–40). Impacts resulting from sediments have been noted for many components of aquatic communities. For example, sediments have been shown to abrade or suffocate periphyton (organisms attached to underwater surfaces); affect respiration, growth, reproductive success, and behavior of aquatic insects and mussels; and affect fish growth, survival, and reproduction (Waters 1995, pp. 173–175). Heavy sediment loads can destroy mussel habitat, resulting in a corresponding shift in mussel fauna (Brim Box and Mossa 1999, p. 100). Excessive sedimentation can lead to rapid changes in stream channel position, channel shape, and bed elevation (Brim Box and Mossa 1999, p. 102). Sedimentation has also been shown to impair the filter feeding ability of mussels. When in high silt environments, mussels may keep their valves closed more often, resulting in reduced feeding activity (Ellis 1936, p. 30); and high amounts of suspended sediments can dilute their food source (Dennis 1984, p. 212). Increased turbidity from suspended sediment can reduce or eliminate juvenile mussel recruitment (Negus 1966, p. 525; Box and Mossa 1999, pp. 101–102). Many mussel species use visual cues to attract host fishes; such a reproductive strategy depends on clear water. For example, increased turbidity may impact the southern sandshell life cycle by reducing the chance that a sight-feeding host fish will encounter the visual display of its superconglutinate lure (Haag *et al.* 1995, p. 475; Blalock-Herod *et al.* 2002, p. 1885). If the superconglutinate is not encountered by a host within a short time period, the glochidia will become nonviable (O'Brien and Brim Box 1999, p. 133). Also, evidence suggests that conglutinates of the southern kidneyshell, once released from the female mussel, must adhere to hard surfaces in order to be seen by its fish host. If the surface becomes covered in fine sediments, the conglutinate cannot attach and is swept away (Hartfield and Hartfield 1996, p. 373).

Biologists conducting mussel surveys within the drainages have reported observations of excessive sedimentation in the streams and rivers of the three basins. While searching for the Alabama pearlshell in headwater streams of the Conecuh and Alabama drainages, D. N. Shelton (1996, pp. 1–5 in litt.) reported many streams within the study area had experienced heavy siltation, and that all species of mollusks appeared to be adversely affected. M. M. Gangloff (Gangloff and Hartfield 2009, p. 253) observed large amounts of sand and silt in the mainstem Pea and Choctawhatchee rivers during a 2006–2007 survey, and considered this a possible reason for the decline of mussels in the drainage.

In 2009–2010, The Nature Conservancy completed an inventory and prioritization of impaired sites in the Yellow River watershed in Alabama and Florida (Herrington *et al.,* in prep.). The study identified and quantified the impacts of unpaved road crossings and streambank instability and erosion within the river corridor and riparian zone, to assess impairments that could impact the five species occurring in the drainage. A total of 339 unpaved roads and approximately 209 river miles of mainstem and tributaries were assessed using standardized methods. Out of these, 409 sites ranked ''High'' or ''Moderate'' in risk of excessive sedimentation according to the Sediment Risk Index. Many of the impaired sites (149) were located upstream of known mussel locations. In addition, habitat conditions were characterized at 44 known mussel locations; the sites were scored numerically and rated as poor, fair, good, or excellent. The majority of the mussel sites were assessed to be either fair or poor. Most of these locations were within the vicinity of bridge crossings and boat ramps and several, particularly in the Shoal River in Florida, were directly downstream of highly impaired unpaved road and river corridor sites. In summary, the study found the threat of sedimentation and habitat degradation is high throughout the Yellow River watershed with over 75 percent of sites assessed exhibiting high or moderate risk, and the majority of known mussel locations impaired.

Potential sediment sources within a watershed include virtually any activity that disturbs the land surface. Current sources of sand, silt, and other sediment accumulation in south-central Alabama and western Florida stream channels include unpaved road runoff, agricultural lands, timber harvest, livestock grazing, and construction and other development activities (Williams and Butler 1994, p. 55; Bennett 2002, p. 5 and references therein; Hoehn 1998, pp. 46–47 and references therein). The Choctawhatchee, Pea, and Yellow Rivers Watershed Management Plan (CPYRWMP) and the Conecuh–Sepulga–Blackwater Rivers Watershed Protection Plan (CSBRWPP) document water quality impairments to the Alabama portions of the watersheds. Both plans identify elevated levels of sediment as one of the primary causes of impairment (CPYRWMP, p. 156; CSBRWPP, p. 110). In the Choctawhatchee and Yellow river drainages, four out of the nine streams in which sediment loads were calculated by the Geological Survey of

Alabama had significant sediment impairment (CPYRWMP, p. 157). In Alabama, runoff from unpaved roads and roadside gullies is considered the main source of sediment transported into the streams of the drainages (Bennett 2002, p. 5 and references therein; CPYRWMP, p. 145). Unpaved roads are constructed primarily of sandy materials and are easily eroded and transported to stream corridors. In addition, certain silvicultural and agricultural activities cause erosion, riparian buffer degradation, and increased sedimentation. Uncontrolled access to small streams by cattle can result in destruction of riparian vegetation, bank degradation and erosion, and localized sedimentation of stream habitats.

Land surface runoff also contributes nutrients (for example, nitrogen and phosphorus from fertilizers, sewage, and animal manure) to rivers and streams, causing them to become eutrophic. Excessive nutrient input stimulates excessive plant growth (algae, periphyton attached algae, and nuisance plants). This enhanced plant growth can cause dense mats of filamentous algae that can expose juvenile mussels to entrainment or predation and be detrimental to the survival of juvenile mussels (Hartfield and Hartfield 1996, p. 373). Excessive plant growth can also reduce dissolved oxygen in the water when dead plant material decomposes. In a review of the effects of eutrophication on mussels, Patzner and Muller (2001, p. 329) noted that stenoecious (narrowly tolerant) species disappear as waters become more eutrophic. They also refer to studies that associate increased levels of nitrate with the decline and absence of juvenile mussels (Patzner and Muller 2001, pp. 330–333). Filamentous algae may also displace certain species of fish, or otherwise affect fish–mussel interactions essential to recruitment (for example, Hartfield and Hartfield 1996, p. 373). Nutrient sources include fertilizers applied to agricultural fields and lawns, septic tanks, and municipal wastewater treatment facilities.

Because of their sedentary characteristics, mussels are extremely vulnerable to toxic effluents (Sheehan *et al.* 1989, pp. 139–140; Goudreau *et al.* 1993, pp. 216–227; Newton 2003, p. 2543). Descriptions of localized mortality have been provided for chemical spills and other discrete point-source discharges; however, rangewide decreases in mussel density and diversity may result from the more insidious effects of chronic, low-level contamination (Newton 2003, p. 2543, Newton *et al.* 2003, p. 2554). Freshwater mussel experts often report chemical contaminants as factors limiting to unionids (Richter *et al.* 1997, pp. 1081–1093). They note high sensitivity of early life stages to contaminants such as chlorine (Wang *et al.* 2007 pp. 2039–2046), metals (Keller and Zam 1991, p. 542; Jacobson *et al.* 1993, pp. 879–883), ammonia (Augspurger *et al.* 2003, pp. 2571–2574; Wang *et al.* 2007 pp. 2039–2046), and pesticides (Bringolf *et al.* 2007a,b pp. 2089–2092, pp. 2096–2099). Pesticide residues from agricultural, residential, or silvicultural activities enter streams mainly by surface runoff. Agricultural crops locally grown within the range of these mussels associated with high pesticide use include cotton, peanuts, corn, and soybeans. Chlorine, metals, and ammonia are common constituents in treated effluent from municipal and industrial wastewater treatment facilities. A total of 62 municipal and 39 industrial wastewater treatment facilities are permitted in Alabama and Florida to discharge treated effluent into surface waters of the three river drainages (FDEP 2010b; ADEM 2010c).

States maintain water-use classifications through issuance of National Pollutant Discharge Elimination System (NPDES) permits to industries, municipalities, and others that set maximum limits on certain pollutants or pollutant parameters. The Alabama Department of Environmental Management (ADEM) has designated the water use classification for most portions of the Escambia, Yellow, and Choctawhatchee Rivers as ''Fish and Wildlife'' (F&W), and a few portions (mostly lakes) as ''Swimming'' (S). The F&W designation establishes minimum water quality standards that are believed to protect existing species and water uses like fishing and recreation within the designated area, while the S classification establishes higher water quality standards that are protective of human contact with the water. The Florida Department of Environmental Protection (FDEP) classifies all three river drainages as Class III waters. The Class III designation establishes minimum water quality standards that are believed to protect species and uses such as recreation. The Choctawhatchee and Shoal Rivers are also designated as Outstanding Florida Waters (OFW) by the State of Florida. The designation prevents the discharge of pollutants, which would lower existing water quality or significantly degrade the OFW.

Section 303(d) of the Clean Water Act requires States to identify waters that do not fully support their designated use classification. These impaired water bodies are placed on the State's 303(d) list, and a total maximum daily load (TMDL) must be developed for the pollutant of concern. A TMDL is an estimate of the total load of pollutants that a segment of water can receive without exceeding applicable water quality criteria. Alabama's 303(d) list identifies a total of 25 impaired stream segments within the Escambia, Yellow, and Choctawhatchee River basins that either support populations of the eight species or that flow into streams that support them. The list identifies metals (mercury and lead), organic enrichment, pathogens, siltation, excess nutrients, or unknown toxicity as reasons for impairment (ADEM 2010a, pp. 4–8). Various potential point and non-point pollution sources are identified, such as atmospheric deposition, pasture grazing, feedlots, municipal, industrial, urban runoff, agriculture, and land development. Florida's 303(d) list identifies a total of 22 impaired stream segments within the basins that either support populations of seven of the species (the Alabama pearlshell does not occur in Florida) or that flow into streams that support them. The list identifies coliform bacteria, low dissolved oxygen (nutrients), and mercury (in fish tissue) as reasons for inclusion (FDEP 2010a, pp. 4–6).

While the negative effects of point-source discharges on aquatic communities in Alabama and Florida have been reduced over time by compliance with State and Federal regulations pertaining to water quality, there has been less success in dealing with nonpoint-source pollution impacts. Because these contaminant sources stem from urban surface runoff, private landowner activities (construction, grazing, agriculture, silviculture), and public construction works (bridge and highway construction and maintenance), they are often more difficult to regulate.

The damming of rivers has been a major factor contributing to the demise of freshwater mussels (Bogan 1993, p. 604). Dams eliminate or reduce river flow within impounded areas, trap silts and cause sediment deposition, alter water temperature and dissolved oxygen levels, change downstream water flow and quality, affect normal flood patterns, and block upstream and downstream movement of mussels and their host fishes (Bogan 1993, p. 604; Vaughn and Taylor 1999, pp. 915–917; Watters 1999, pp. 261–264; McAllister *et al.* 2000, p. iii; Marcinek *et al.* 2005, pp. 20–21). Below dams, mollusk declines are associated with changes and fluctuation in flow regime, scouring and erosion, reduced dissolved oxygen

levels, water temperatures, and changes in resident fish assemblages (Williams *et al.* 1993, p. 7; Neves *et al.* 1997, pp. 63–64; Watters 1999, pp. 261–264; Marcinek *et al.* 2005, pp. 20–21). Because rivers are linear systems, these alterations can cause mussel declines for many miles below the dam (Vaughn and Taylor 1999, p. 916).

Three significant mainstem impoundments are situated within the three drainages, all in Alabama. Constructed in 1923 for hydroelectric power generation, Point A Lake and Gantt Lake dams are located on the mainstem of the Conecuh River in Covington County, AL. Combined, these two dams impound approximately 3,400 acres at normal pool. Both impoundments have limited storage capacity and are operated as modified run-of-river projects with daily peaking. For example, when inflows to Gantt are greater than 1,500 cubic feet per second (cfs), the outflow matches the inflow at Point A. However, during the summer months, when inflows can fall below 1,500 cfs, a portion of the inflow may be stored and released when power generation is in high demand. Regardless of the inflow, Point A Dam has a minimum continuous discharge requirement of 500 cfs and a requirement to meet a dissolved oxygen level of no less than 4.0 milligram per liter (mg/l).

The Elba Dam on the Pea River mainstem in Alabama was constructed in 1903 for power generation, but is no longer in use. The dam does not store water, so outflow basically equals inflow. The Elba Dam does not have a reservoir, only a widened channel, which is roughly one and a half to two times wider above the dam than below. Channel scour (deepening of the streambed as a result of erosion) is occurring downstream of the Elba Dam (Williams 2010 pers. comm.). All three dams are barriers to fish migration and to the movement of mussel host species. By blocking fish movement, the dams prevent gene exchange between upstream and downstream mussel populations. The three dams currently separate populations of southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, and fuzzy pigtoe. In addition, two smaller impoundments are located on tributary streams. Lake Frank Jackson is situated on Lightwood Knot Creek, a tributary to the Yellow River in Covington County, Alabama; and Lake Tholocco, on Claybank Creek, is a tributary to the Choctawhatchee River in Dale County, AL. Waters released from these shallow impoundments can have extremely elevated temperatures in summer, which alters the normal temperature cycle downstream (Williams *et al.* 2000 unpub. data).

The potential exists for more dams to be constructed within the three drainages, and at least four additional impoundments are proposed. These include proposed impoundments on Murder Creek and Big Escambia Creek in the Escambia drainage in Alabama, the Yellow River mainstem in Florida, and the Little Choctawhatchee River in Alabama. These proposed projects have implications for the populations of all eight species. Given projected population increases and the need for municipal water supply, other proposals for impoundment construction are expected in the future.

In summary, the loss of habitat and range from various forms of pollution and impoundments is a significant threat to the continued existence of these eight species. Degradation from sedimentation and contaminants threatens the habitat and water quality necessary to support these species throughout their entire range. Sedimentation can cause mortality by suffocation, impair the ability to feed, respire, and reproduce; and destabilize substrate. Contaminants associated with municipal and industrial effluents (metals, ammonia, chlorine) and with agriculture and silviculture (pesticides) are lethal to mussels particularly to the highly sensitive early life stages. The effects of impoundments are more discreet, but can cause severe alternations to mussel habitat both upstream and downstream of the dam, and can impair dispersal and breeding ability. While recent surveys for these species have documented several new populations, they have also documented a decline in (and the loss of) many of the known populations due to human impact. Therefore, we have determined that the present or threatened destruction, modification, or curtailment of habitat and range is a threat of high magnitude to the Alabama pearlshell, round ebonyshell, southern kidneyshell, southern sandshell, and Choctaw bean; and a threat of moderate magnitude to the tapered pigtoe, narrow pigtoe, and fuzzy pigtoe. This threat is current (as evidenced by population declines) and is projected to continue and increase into the future with additional anthropogenic pressures.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

None of the eight mussels are commercially valuable species, and the streams and rivers that they inhabit are not subject to harvesting activities for commercial mussel species. Although the eight species have been taken for scientific and private collections in the past, collecting is not considered a factor in the decline of these species. Such activity may increase as their rarity becomes known; however, we have no specific information indicating that overcollection is currently a threat. Therefore, we find that overutilization for commercial, recreational, scientific, or educational purposes is not a threat to the eight mussels at this time.

C. Disease or Predation

Diseases of freshwater mussels are poorly known, and we have no specific information indicating that disease poses a threat to populations of these eight species. Juvenile and adult mussels are prey items for some invertebrate predators and parasites (for example, nematodes and mites), and provide prey for a few vertebrate species (for example, raccoons, muskrats, otters, and turtles) (Hart and Fuller 1974, pp. 225–240). However, we have no evidence of any specific declines in these species due to predation. Therefore, diseases and predation of freshwater mussels remain largely unstudied and are not considered a threat to the eight mussels at this time.

D. The Inadequacy of Existing Regulatory Mechanisms

There is no information on the sensitivity of the Alabama pearlshell, round ebonyshell, southern kidneyshell, southern sandshell, Choctaw bean, tapered pigtoe, narrow pigtoe, or fuzzy pigtoe to aquatic pollutants. Current State and Federal regulations regarding pollutants are designed to be protective of aquatic organisms; however, freshwater mussels may be more susceptible to some pollutants than test organisms commonly used in bioassay tests. A multitude of bioassay tests conducted on 16 mussel species (summarized by Augspurger *et al.* 2007, pp. 2025–2028), show that freshwater mussels are more sensitive than previously known to some chemical contaminants including chlorine, ammonia, copper, the pesticides chlorothalonil and glyphosate, and the surfactant MON 0818. For example, several recent studies have demonstrated that U.S. Environmental Protection Agency (EPA) criteria for ammonia may not be protective of freshwater mussels (Augspurger *et al.* 2003, p. 2571; Newton *et al.* 2003, pp. 2559–2560; Mummert *et al.* 2003, pp. 2548–2552).

Ammonia is an important aquatic pollutant because of its relatively high toxicity and common occurrence in

riverine systems. This has application to the expected sources of these chemicals in the environment. Significant sources of nutrient enrichment leading to elevated ammonia include industrial wastewater, municipal wastewater treatment plant effluents, and urban and agricultural runoff (chemical fertilizers and animal wastes) (Augspurger *et al.* 2007, p. 2026). Elevated copper in surface waters can result from natural runoff sources, but is more often associated with a private or municipal wastewater effluent. Pesticide residues enter streams from agricultural, residential, or silvicultural runoff. Environmental chlorine concentrations will most often be associated with a point source discharge such as a municipal wastewater treatment facility.

As indicated in the Factor A discussion above, sedimentation is considered the most significant threat to these eight species. Best Management Practices (BMPs) for sediment and erosion control are often recommended or required for construction projects, however, compliance, monitoring, and enforcement of these recommendations are often poorly implemented. Although unpaved roads likely contribute the majority of sediment to the river basins, other sources including forestry, row crops, and construction contribute to the total sediment load.

States are required under the Clean Water Act to establish a TMDL for the pollutants of concern that the water body can receive without exceeding the applicable standard (see discussion under Factor A). However, the Federal Clean Water Act is not fully utilized in the protection of these river systems. For example, of the 51 impaired water bodies identified within the drainages, less than one-fourth currently have approved TMDLs (ADEM 2010b, pp. 3–6; FDEP 2010a, pp. 4–6).

In summary, some regulatory mechanisms exist that protect aquatic species, however, these regulations are not effective at protecting mussels and their habitats from sedimentation and contaminants. This is apparent from the decline in all eight mussels. Pollution from non-point sources is the greatest threat to these eight mussels (see Factor A discussion); however, this type of pollution is difficult to regulate and not effectively controlled by State and Federal water quality regulations within the proposed designation. Therefore, we find current existing regulatory mechanisms are inadequate to protect the eight mussels throughout their ranges. This threat is current and is projected to continue into the future.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Random Catastrophic Events

The Gulf coastal region is prone to extreme hydrologic events. Extended droughts result from persistent high-pressure systems, which inhibit moisture from the Gulf of Mexico from reaching the region (Jeffcoat *et al.* 1991, p. 163–170). Warm, humid air from the Gulf of Mexico can produce strong frontal systems and tropical storms resulting in heavy rainfall and extensive flooding (Jeffcoat *et al.* 1991, p. 163–170). Although floods and droughts are a natural part of the hydrologic processes that occur in these river systems, these events may contribute to the further decline of mussel populations suffering the effects of other threats.

During high flows, flood scour can dislodge mussels where they may be injured, buried, swept into unsuitable habitats, or stranded and perish when flood waters recede (Vannote and Minshall 1982, p. 4105; Tucker 1996, p. 435; Hastie *et al.* 2001, pp. 107–115; Peterson *et al.* 2011, unpaginated). Heavy spring rains in 2009 resulted in severe flooding in the basins that destroyed numerous stream crossings.

During drought, stream channels may become disconnected pools where mussels are exposed to higher water temperatures, lower dissolved oxygen levels, and predators; or channels may become dewatered entirely. Johnson *et al.* (2001, p. 6) monitored mussel responses during a severe drought in 2000 in tributaries of the Lower Flint River in Georgia, and found that most mortality occurred when dissolved oxygen levels dropped below 5 mg/L. Furthermore, increased human demand and competition for surface and ground water resources for irrigation and consumption during drought can cause drastic reductions in stream flows and alterations to hydrology (Golladay *et al.* 2004, p. 504; Golladay *et al.* 2007 unpaginated). Extended droughts occurred in the Southeast during 1998 to 2002 and again in 2006 to 2008. The effects of these recent droughts on these eight mussels are unknown; however, substantial declines in mussel diversity and abundance as a direct result of drought have been documented in southeastern streams (for example, Golladay *et al.* 2004, pp. 494–503; Haag and Warren 2008, p. 1165). The Alabama pearlshell is particularly at risk during drought as its headwater stream habitats are vulnerable to dewatering. Shelton (1995, p. 4 unpub. data) reported one of the most common causes of mortality in the species is due to stranding by extreme low water.

There is a growing concern that climate change may lead to increased frequency of severe storms and droughts (McLaughlin *et al.* 2002, p. 6074; Golladay *et al.* 2004, p. 504; Cook *et al.* 2004, p. 1015). Specific effects of climate change to mussels, their habitat, and their fish hosts could include changes in stream temperature regimes, the timing and levels of precipitation causing more frequent and severe floods and droughts, and alien species introductions. Increases in temperature and reductions in flow may also lower dissolved oxygen levels in interstitial habitats which can be lethal to juveniles (Sparks and Strayer 1998, pp. 131–133). Effects to mussel populations from these environmental changes could include reduced abundance and biomass, altered species composition, and host fish considerations (Galbraith *et al.* 2010, pp. 1180–1182). The present conservation status, complex life histories, and specific habitat requirements of freshwater mussels suggest that they may be quite sensitive to climate change (Hastie *et al.* 2003, p. 45).

The linear nature of their habitat, reduced range, and small population sizes make these eight mussels vulnerable to contaminant spills. Spills as a result of transportation accidents are a constant, potential threat as numerous highways and railroads cross the stream channels of the basins. Also, more than 400 oil wells are located within Conecuh and Escambia Counties, Alabama. In Conecuh County, most of these wells are concentrated in the Cedar Creek drainage, which supports at least two populations of the Alabama pearlshell. These wells are subject to periodic spills either directly at the well site or associated with the transport of the oil. For example, on February 5, 2010, an oil spill occurred in the headwaters of Feagin Creek. Feagin Creek is located between two known pearlshell locations, Little Cedar and Amos Mill Creeks. The resulting spill discharged more than 150 gallons of oil into Feagin Creek. Although there were no known populations of the pearlshell in Feagin Creek, this type of spill could have easily occurred in one of the adjacent watersheds that supports the pearlshell. Since 2000, there have been 13 spills reported in Conecuh, 36 in Escambia, and 33 in Covington Counties, Alabama.

Reduced Genetic Diversity

Population fragmentation and isolation prohibits the natural interchange of genetic material between

populations. Low numbers of individuals within the isolated populations have greater susceptibility to deleterious genetic effects, including inbreeding depression and loss of genetic variation (Lynch 1996, pp. 493–494). Small, isolated populations, therefore, are more susceptible to environmental pressures, including habitat degradation and stochastic events, and thus are the most susceptible to extinction (Primack 2008, pp. 151–153). It is unknown if any of the eight mussel species are currently experiencing a loss of genetic diversity. However, surviving populations of the Alabama pearlshell, round ebonyshell, and southern kidneyshell do have highly restricted or reduced ranges, fragmented habitats, and extremely small population sizes.

Host Fish Considerations

As mentioned in the General Biology section above, all of these eight species require a fish host in order to complete their life cycle. Therefore, these mussels would be adversely affected by the loss or reduction of fish species essential to their parasitic glochidial stage. The blacktail shiner (*Cyprinella venusta*), a common and abundant fish species, was found to serve as a glochidial host for the tapered pigtoe and fuzzy pigtoe (White *et al.* 2008, p. 123). The specific hosts for the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, and narrow pigtoe have not been identified, however, other species of the same genera are known to parasitize cyprinids (minnows), centrachids (sunfish), and percids (darters) (Haag and Warren 1997, pp. 580–581, 583; Keller and Ruessler 1997, p. 405; O'Brien and Brim Box 1999, p. 134; Haag *et al.* 1999, p. 150; Haag and Warren 2003, pp. 81–82; Luo 1993, p. 16).

Nonindigenous Species

The Asian clam (*Corbicula fluminea*) has been introduced to the drainages and may be adversely affecting these eight mussels through direct competition for space and resources. The Asian clam was first detected in eastern Gulf drainages in the early 1960s, and is presently wide-spread throughout the Escambia, Yellow, and Choctawhatchee River drainages (Heard 1975, p. 2). The invasion of the Asian clam in these and in other eastern Gulf drainages has been accompanied by drastic declines in populations of native mussels (see observations by Heard 1975, p. 2; and Shelton 1995, p. 4 unpub. data). However, it is difficult to say whether the Asian clam competitively excluded the native mussels, or if it was simply tolerant of whatever caused the mussels to disappear. The Asian clam may pose a direct threat to native mussels, particularly as juveniles, as a competitor for resources such as food, nutrients, and space (Neves and Widlak 1987, p. 6). Dense populations of Asian clams may ingest large numbers of unionid sperm, glochidia, and newly metamorphosed juveniles, and may actively disturb sediments, reducing habitable space for juvenile native mussels, or displacing them downstream (Strayer 1999, p. 82; Yeager *et al.* 2000, pp. 255–256).

The flathead catfish (*Pylodictis olivaris*) has been introduced to the drainages and may be adversely impacting native fish populations. The flathead catfish is a large predator native to the central United States, and since its introduction outside its native range has altered the composition of native fish populations through predation (Boschung and Mayden 2004, p. 350). Diet and selectivity studies of introduced flathead catfish in coastal North Carolina river systems show it feeds primarily on other fish species (Guier *et al.* 1984, pp. 617–620; Pine *et al.* 2005, p. 909). The flathead catfish is now well-established in the Escambia, Yellow, and Choctawhatchee River drainages, and its numbers appear to be growing (Strickland 2010 pers. comm.). Biologists working in the Florida portions of these drainages have observed a correlation between the increase in flathead catfish numbers and a decrease in numbers of other native fish species, particularly of bullhead catfish (*Ameiurus* sp.) and redbreast sunfish (*Lepomis auritus*) (Strickland 2010 pers. comm.). Although we do not know the specific fish hosts for six of the mussel species, the loss or reduction of native fishes in general could affect their ability to recruit.

In summary, a variety of natural or manmade factors currently threaten these eight mussels. Stochastic events such as droughts and floods have occurred in these three river drainages in the past, and climate change may increase the frequency and intensity of similar events in the future. The withdrawal of surface and ground waters during drought can cause further drastic flow reductions and alterations that may cause declines in mussel abundance and distribution. Contaminant spills have also occurred in these drainages and currently are a threat, particularly in the Alabama portions of the Escambia River drainage where there are numerous oil wells. It is not known if these species are currently experiencing a loss of genetic viability; however, their restricted or reduced ranges, fragmented habitats, and small population sizes increases the risks and consequences of inbreeding depression and loss of genetic variation. Introduced species, such as the Asian clam, may adversely impact these mussels through direct competition for resources. Another introduced species, the flathead catfish, may consume host fishes, thereby affecting mussel recruitment. Therefore, we have determined that other natural or manmade factors, specifically threats from flooding, drought, and contaminant spills, are high in magnitude to the Alabama pearlshell, round ebonyshell, southern kidneyshell, southern sandshell, and Choctaw bean; and are moderate in magnitude to the tapered pigtoe, narrow pigtoe, and fuzzy pigtoe. These threats are currently impacting these species and are projected to continue or increase in the future. We have determined that threats from the Asian clam are moderate in magnitude to the Alabama pearlshell, round ebonyshell, southern kidneyshell, southern sandshell, and Choctaw bean; and are low in magnitude to the tapered pigtoe, narrow pigtoe, and fuzzy pigtoe. We have determined that reduced genetic diversity, the absence or reduction of fish hosts, and the presence of flathead catfish have the potential to adversely impact the eight mussels, however, we do not know the magnitude of these threats at this time.

Proposed Determination

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe. Section 3(6) of the Act defines an endangered species as ''any species which is in danger of extinction throughout all or a significant portion of its range,'' and defines a threatened species as ''any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.'' As described in detail above, these eight species are currently at risk throughout all of their respective ranges due to ongoing threats of habitat destruction and modification (Factor A), inadequacy of existing regulatory mechanisms (Factor D), and other natural or manmade factors affecting their continued existence (Factor E). Specifically, these factors include sedimentation, municipal and industrial

effluents, pesticides, excessive nutrients, impoundment of stream channels, recurring drought and flooding, contaminant spills, and the introduced Asian clam. In addition, existing regulatory mechanisms are inadequate to ameliorate some of the threats affecting these mussels and their habitats. We believe these threats are currently impacting these species and are projected to continue and potentially worsen in the future. These eight mussels are also at increased threat due to the loss of genetic viability and the reduction or absence of fish hosts (described under Factor E); however, these threats are not currently known to be imminent.

Species with small ranges, few populations, and small or declining population sizes, are the most vulnerable to extinction (Primack 2008, p. 137). The effects of certain factors, particularly habitat degradation and loss, catastrophic events, and introduced species, increase in magnitude when population size is small (Soulé 1987, pp. 33, 71; Primack 2008, pp. 133–135, 152). We believe the impact of habitat degradation, catastrophic events, and introduced species are more severe (magnitude is higher) to the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, and Choctaw bean, which have few populations coupled with low numbers of individuals and/or very limited ranges, than they are to the tapered pigtoe, narrow pigtoe, and fuzzy pigtoe which have declining and fragmented populations and limited ranges. We believe that, when combining the effects of historical, current, and future habitat loss and degradation, historical and ongoing drought, and the exacerbating effects of small and declining population sizes and curtailed ranges, the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, and Choctaw bean are in danger of extinction throughout all of their ranges; and the tapered pigtoe, narrow pigtoe, and fuzzy pigtoe are threatened to become endangered within the foreseeable future throughout all of their ranges. In addition, any factor (*i.e.,* habitat loss or natural and manmade factors) that results in a further decline in habitat or individuals may be problematic for the long-term recovery of these species.

Therefore, based on the best available scientific and commercial information, we propose to list the Alabama pearlshell, round ebonyshell, southern kidneyshell, southern sandshell, and Choctaw bean as endangered species throughout all of their ranges; and we propose to list the tapered pigtoe, narrow pigtoe, and fuzzy pigtoe as threatened species throughout all of their ranges. Furthermore, we examined each of the five species proposed for endangered status and each of the three species proposed for threatened status to analyze if any significant portions of their ranges may warrant a different status. However, because of their limited and curtailed ranges, and uniformity of the threats throughout their entire respective, we find there are no significant portions of any of the species' ranges that may warrant a different determination of status.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness and conservation by Federal, State, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and requires that recovery actions be carried out for all listed species. The protection measures required of Federal agencies and the prohibitions against certain activities involving listed wildlife are discussed in Effects of Critical Habitat Designation and are further discussed, in part, below.

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

Federal agency actions that may affect the eight mussel species include, but are not limited to: the management of and any other landscape altering activities on Federal lands administered by the Department of Defense and U.S. Forest Service; issuance of section 404 Clean Water Act permits by the Army Corps of Engineers; licensing of hydroelectric dams, and construction and management of gas pipeline and power line rights-of-way approved by the Federal Energy Regulatory Commission; construction and maintenance of roads or highways funded by the Federal Highway Administration; and land management practices administered by the Department of Agriculture. It has been the experience of the Service from consultations on other species, however, that nearly all section 7 consultations have been resolved so that the species have been protected and the project objectives have been met.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. The prohibitions, codified at 50 CFR 17.21 for endangered wildlife make it illegal for any person subject to the jurisdiction of the United States to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt any of these), import, export, ship in interstate commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to agents of the Service and State conservation agencies.

We may issue permits to carry out otherwise prohibited activities involving endangered and threatened wildlife species under certain circumstances. Regulations governing permits are codified at 50 CFR 17.22 for endangered species, and at 17.32 for threatened species. With regard to endangered wildlife, a permit must be issued for the following purposes: for scientific purposes, to enhance the propagation or survival of the species, and for incidental take in connection with otherwise lawful activities.

It is our policy, as published in the **Federal Register** on July 1, 1994 (59 FR 34272), to identify, to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a proposed listing on proposed and ongoing activities within the range of species proposed for listing. The following activities could potentially result in a violation of section 9 of the Act; this list is not comprehensive:

(1) Unauthorized collecting, handling, possessing, selling, delivering, carrying, or transporting of the species, including import or export across State lines and international boundaries, except for properly documented antique specimens of these taxa at least 100 years old, as defined by section 10(h)(1) of the Act.

(2) Introduction of nonnative species that compete with or prey upon these eight mussel species, such as the zebra mussel (*Dreissena polymorpha*) and the black carp (*Mylopharyngodon piceus*).

(3) The unauthorized release of biological control agents that attack any life stage of these species.

(4) Unauthorized modification of the channel or water flow of any stream or water body in which these species are known to occur.

Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Panama City Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**). Requests for copies of the regulations concerning listed animals and general inquiries regarding prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, Endangered Species Permits, 1875 Century Boulevard, Suite 200, Atlanta, GA 30345; telephone: 404–679 –7140; facsimile: 404–679–7081.

Critical Habitat for the Alabama Pearlshell, Round Ebonyshell, Southern Sandshell, Southern Kidneyshell, Choctaw Bean, Tapered Pigtoe, Narrow Pigtoe, and Fuzzy Pigtoe

Background

It is our intent to discuss below only those topics directly relevant to the designation of critical habitat for the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe in this section of the proposed rule.

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner seeks or requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the consultation requirements of section 7(a)(2) would apply, but even in the event of a destruction or adverse modification finding, the obligation of the Federal action agency and the landowner is not to restore or recover the species, but to implement reasonable and prudent alternatives to avoid destruction or adverse modification of critical habitat.

For inclusion in a critical habitat designation, the habitat within the geographical area occupied by the species at the time it was listed must contain physical or biological features which are essential to the conservation of the species and which may require special management considerations or protection. Critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat), focusing on the principal biological or physical constituent elements (primary constituent elements) within an area that are essential to the conservation of the species (such as roost sites, nesting grounds, seasonal wetlands, water quality, tide, soil type). Primary constituent elements are the elements of physical or biological features that, when laid out in the appropriate quantity and spatial arrangement to provide for a species' life-history processes, are essential to the conservation of the species.

Under the Act, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. We designate critical habitat in areas outside the geographical area occupied by a species only when a designation limited to its range would be inadequate to ensure the conservation of the species. When the best available scientific data do not demonstrate that the conservation needs of the species require such additional areas, we will not designate critical habitat in areas outside the geographical area occupied by the species. An area currently occupied by the species but that was not occupied at the time of listing may, however, be essential to the conservation of the species and may be included in the critical habitat designation.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific and commercial data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106–554; H.R. 5658)), and our associated Information Quality Guidelines, provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, or other unpublished

materials and expert opinion or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. Climate change will be a particular challenge for biodiversity because the interaction of additional stressors associated with climate change and current stressors may push species beyond their ability to survive (Lovejoy 2005, pp. 325–326). The synergistic implications of climate change and habitat fragmentation are the most threatening facet of climate change for biodiversity (Hannah and Lovejoy 2005, p. 4). Current climate change predictions for terrestrial areas in the Northern Hemisphere indicate warmer air temperatures, more intense precipitation events, and increased summer continental drying (Field *et al.* 1999, pp. 1–3; Hayhoe *et al.* 2004, p. 12422; Cayan *et al.* 2006, p. 10; Intergovernmental Panel on Climate Change (IPCC) 2007, p. 1181). Climate change may lead to increased frequency and duration of severe storms and droughts (Golladay *et al.* 2004, p. 504; McLaughlin *et al.* 2002, p. 6074; Cook *et al.* 2004, p. 1015).

We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act, (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to insure their actions are not likely to jeopardize the continued existence of any endangered or threatened species, and (3) the prohibitions of section 9 of the Act if actions occurring in these areas may affect the species. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of this species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

Prudency Determination

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12), require that, to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. Our regulations (50 CFR 424.12(a)(1)) state that the designation of critical habitat is not prudent when one or both of the following situations exist: (1) The species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of threat to the species, or (2) such designation of critical habitat would not be beneficial to the species.

There is currently no imminent threat of take attributed to collection or vandalism under Factor B for any of these species, and identification and mapping of critical habitat is not expected to initiate any such threat. In the absence of finding that the designation of critical habitat would increase threats to a species, if there are any benefits to a critical habitat designation, then a prudent finding is warranted. Here, the potential benefits of designation include: (1) Triggering consultation under section 7 of the Act, in new areas for actions in which there may be a Federal nexus where it would not otherwise occur because, for example, it is or has become unoccupied or the occupancy is in question; (2) focusing conservation activities on the most essential features and areas; (3) providing educational benefits to State or county governments or private entities; and (4) preventing people from causing inadvertent harm to the species. Therefore, because we have determined that the designation of critical habitat will not likely increase the degree of threat to the species and may provide some measure of benefit, we find that designation of critical habitat is prudent for the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe.

Critical Habitat Determinability

Having determined that designation is prudent, under section 4(a)(3) of the Act we must find whether critical habitat for the eight species is determinable. Our regulations at 50 CFR 424.12(a)(2) state that critical habitat is not determinable when one or both of the following situations exist:

(i) Information sufficient to perform required analyses of the impacts of the designation is lacking, or

(ii) The biological needs of the species are not sufficiently well known to permit identification of an area as critical habitat. When critical habitat is not determinable, the Act allows the Service an additional year to publish a critical habitat designation (16 U.S.C. 1533(b)(6)(C)(ii)).

We reviewed the available information pertaining to the biological needs of the species and habitat characteristics where these species are located. This and other information represent the best scientific data available and led us to conclude that the designation of critical habitat is determinable for these eight species.

Physical and Biological Features

In accordance with section 3(5)(A)(i) and 4(b)(1)(A) of the Act and the regulations at 50 CFR 424.12, in determining which areas within the geographical area occupied at the time of listing to propose as critical habitat, we consider the physical and biological features (PBFs) essential to the conservation of the species which may require special management considerations or protection. These include, but are not limited to:

(1) Space for individual and population growth and for normal behavior;

(2) Food, water, air, light, minerals, or other nutritional or physiological requirements;

(3) Cover or shelter;

(4) Sites for breeding, reproduction, or rearing (or development) of offspring; and

(5) Habitats that are protected from disturbance or are representative of the historic, geographical, and ecological distributions of a species.

We derive the specific PBFs required for the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe based on their biological needs. Unfortunately, little is known of the specific habitat requirements of any of these eight mussel species other than all require flowing water, stable stream or river channels, adequate water quality, and fish hosts for larval mussel development to juvenile mussels. To identify the physical and biological needs of the species, we have relied on current conditions at locations where each of the species survive, the limited information available on these eight mussels and their close relatives, and factors associated with the decline and extirpation of these and other freshwater

mussels from portions of the Escambia, Yellow, and Choctawhatchee River basins.

Space for Individual and Population Growth and for Normal Behavior

The Alabama pearlshell, round ebonyshell, southern kidneyshell, southern sandshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe are all historically associated with the Escambia, Yellow, and Choctawhatchee River drainages in Alabama and Florida. The Alabama pearlshell is also known from three locations in the Mobile River Basin; however, only one of those is considered to be currently occupied. The eight mussels are found embedded in stable substrates composed mainly of fine to coarse sand, with occasional patches of clay or gravel (Williams *et al.* 2008, pp. 32–34), and within areas of sufficient current velocities to remove finer sediments. These habitats are formed and maintained by water quantity, channel slope, and normal sediment input to the system. Changes in one or more of these parameters can result in channel degradation or channel aggradation, with serious effects to mussels. The decline of the mussel fauna of these eastern Gulf Coastal Plain drainages is not well understood, but is primarily associated with the loss of habitats and channel instability due to excessive sedimentation (Williams and Butler 1994, p. 55). Sedimentation has been determined to be a major factor in habitat destruction, resulting in corresponding shift in mussel fauna (Brim Box and Mossa 1999, p. 102). Stable stream bottom substrates not only provide space for populations of these eight mussel species, but also provide cover and shelter and sites for breeding, reproduction, and growth of offspring. Stream channel stability is essential to the conservation of the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe.

Food

Freshwater mussels, such as these eight species, filter algae, detritus, and bacteria from the water column (Williams *et al.* 2008, p. 67). For the first several months, juvenile mussels employ pedal (foot) feeding, extracting bacteria, algae, and detritus from the sediment (Yeager *et al.* 1994, pp. 217–221). Food availability and quality are affected by habitat stability, floodplain connectivity, flow, and water quality. Adequate food availability and quality is essential for normal behavior, growth, and viability during all life stages of these species.

Water

The Alabama pearlshell, round ebonyshell, southern kidneyshell, southern sandshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe are riverine species that depend upon adequate water flow. Continuously flowing water is a habitat feature associated with all of the eight species. Flowing water maintains the stream bottom habitats where these species are found, transports food items to the sedentary juvenile and adult life stages, removes wastes, and provides oxygen for respiration. Populations of the narrow pigtoe were recently discovered in Gantt and Point A Lakes (Williams *et al.* 2008, p. 317), manmade reservoirs on the Conecuh River mainstem in Alabama. We attribute the occurrence of the species in these impoundments to the relatively small size of the reservoirs, and to the operational regime of the dams. As mentioned in the Dams and Impoundments section (see Factor A, above), both impoundments have limited storage capacity and are operated as modified run-of-river projects with daily peaking. Therefore, most of the time, the outflow matches the inflow. Also, some areas in the reservoirs are narrow and riverine, for instance the area around Dunns Bridge on Gantt Lake. Here, narrow pigtoe were found in relatively high numbers in firm, stable sand substrates with little or no silt accumulation (Williams 2009 pers. comm.; Pursifull 2006 pers. obs.). Although the natural state of the river's hydrological flow regime is modified, it does retain the features necessary to maintain the benthic habitats where the species are found. Therefore, we believe that flowing water is essential to the conservation of all eight species.

The ranges of standard physical and chemical water quality parameters (such as temperature, dissolved oxygen, pH, and conductivity) that define suitable habitat conditions for the eight species have not been investigated. However, as relatively sedentary animals, mussels must tolerate the full range of such parameters that occur naturally within the streams where they persist. Both the amount (flow) and the physical and chemical conditions (water quality) where each of the eight species currently exist vary widely according to season, precipitation events, and seasonal human activities within the watershed. Conditions across their historical ranges vary even more due to watershed size, geology, geography, and differences in human population densities and land uses. In general, each of the species survives in areas where the magnitude, frequency, duration, and seasonality of water flow are adequate to maintain stable habitats (for example, sufficient flow to remove fine particles and sediments without causing degradation), and where water quality is adequate for year-round survival (for example, moderate to high levels of dissolved oxygen, low to moderate input of nutrients, and relatively unpolluted water and sediments). Therefore, adequate water flow and water quality (as defined below) are essential to the conservation of the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe.

We currently believe that most numeric standards for pollutants and water quality parameters (for example, dissolved oxygen, pH, heavy metals) that have been adopted by the States under the Clean Water Act represent levels that are essential to the conservation of each of these eight mussels. However, some States' standards may not adequately protect mollusks, or are not being appropriately measured, monitored, or achieved in some reaches (see Factors A and D above). The Service is currently in consultation with the EPA to evaluate the protectiveness of criteria approved in EPA's water quality standards for threatened and endangered species and their critical habitats as described in the Memorandum of Agreement that our agencies signed in 2001 (66 FR 11201, February 22, 2011). Other factors that can potentially alter water quality are droughts and periods of low flow, non-point-source runoff from adjacent land surfaces (for example, excessive amounts of sediments, nutrients, and pesticides), point-source discharges from municipal and industrial wastewater treatment facilities (for example, excessive amounts of ammonia, chlorine, and metals), and random spills or unregulated discharge events. This could be particularly harmful during drought conditions when flows are depressed and pollutants are more concentrated. Therefore, adequate water quality is essential for normal behavior, growth, and viability during all life stages of the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe.

Sites for Breeding, Reproduction, or Rearing

Freshwater mussels require a host fish for transformation of larval mussels

(glochidia) to juvenile mussels (Williams *et al.* 2008, p. 68). Thus, the presence of the appropriate host fishes to complete the reproductive life cycle is essential to the conservation of these eight mussels. The blacktail shiner was found to serve as a host for the fuzzy pigtoe and tapered pigtoe in a preliminary study trial (White *et al.* 2008, p. 123). This minnow species occurs in a variety of habitats in drainages throughout the coastal plain (Mettee *et al.* 1996, pp. 174–175). The specific host fish(es) for the Alabama pearlshell, round ebonyshell, southern kidneyshell, narrow pigtoe, southern sandshell, and Choctaw bean is currently unknown; however, other species of the same genera are known to parasitize cyprinids (minnows), centrachids (sunfish), and percids (darters) (Haag and Warren 2003, pp. 81–82; Haag and Warren 1997, pp. 580–581, 583; Keller and Ruessler 1997, p. 405; O'Brien and Brim Box 1999, p. 134; Haag *et al.* 1999, p. 150).

Juvenile mussels require stable bottom habitats for growth and survival. Excessive sediments or dense growth of filamentous algae can expose juvenile mussels to entrainment or predation and be detrimental to the survival of juvenile mussels (Hartfield and Hartfield 1996, p. 373). Geomorphic instability can result in the loss of habitats and juvenile mussels due to scouring or deposition (Hartfield 1993, p. 138). Therefore, stable bottom substrate with low to moderate amounts of filamentous algae growth is essential to the conservation of Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe.

Primary Constituent Elements for the Eight Mussel Species

Under the Act and its implementing regulations, we are required to identify the PBFs essential to the conservation of these eight mussel species in areas occupied at the time of listing, focusing on the features' primary constituent elements (PCEs). We consider PCEs to be the elements of PBFs that, when laid out in the appropriate quantity and spatial arrangement to provide for a species' life-history processes, are essential to the conservation of the species.

Based on the above needs and our current knowledge of the life history, biology, and ecology of the species and the habitat requirements for sustaining the essential life-history functions of the species, we have determined that the PCEs for the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe are:

(1) Geomorphically stable stream and river channels and banks (channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation).

(2) Stable substrates of sand or mixtures of sand with clay or gravel with low to moderate amounts of fine sediment and attached filamentous algae.

(3) A hydrologic flow regime (the magnitude, frequency, duration, and seasonality of discharge over time) necessary to maintain benthic habitats where the species are found, and to maintain connectivity of rivers with the floodplain, allowing the exchange of nutrients and sediment for habitat maintenance, food availability, and spawning habitat for native fishes.

(4) Water quality, including temperature (not greater than 32 °C), pH (between 6.0 to 8.5), oxygen content (not less than 5.0 mg/L), hardness, turbidity, and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages.

(5) The presence of fish hosts. Diverse assemblages of native fish species will serve as a potential indication of host fish presence until appropriate host fishes can be identified. For the fuzzy pigtoe and tapered pigtoe, the presence of blacktail shiner (*Cyprinella venusta*) will serve as a potential indication of fish host presence.

Special Management Considerations or Protection

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features that are essential to the conservation of the species and that may require special management considerations or protections. None of the portions of the critical habitat units proposed for these eight species below have been designated as critical habitat for other mussel species that are already listed under the Act. None of the areas proposed are presently under special management or protection provided by a legally operative management plan or agreement for the conservation of either the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, or fuzzy pigtoe. Various activities in or adjacent to each of the critical habitat units described in this proposed rule may affect one or more of the PCEs. Some of these activities include, but are not limited to, those discussed in the ''Summary of Factors Affecting the Species,'' above (see Factors A and D). Other activities that may affect PCEs in the proposed critical habitat units include those listed in the ''Available Conservation Measures'' section above.

Many of the threats to the eight mussels and their habitat are pervasive and common in all of the nine units. These include the potential of significant changes in stream bed material composition and quality by activities such as construction projects, livestock grazing, timber harvesting, and other watershed and floodplain disturbances that release sediments or nutrients into the water; the potential of significant alteration of water chemistry or water quality; the potential of anthropogenic activities such as channelization, impoundment, and channel excavation that could cause aggradation or degradation of the channel bed elevation or significant bank erosion; and the potential of significant changes in the existing flow regime due to such activities as impoundment, water diversion, or water withdrawal. Because the areas proposed for critical habitat below are facing these threats, they require special management consideration and protection.

Criteria Used To Identify Critical Habitat

As required by section 4(b) of the Act, we used the best scientific and commercial data available in determining areas within the geographical area occupied at the time of listing that contain the features essential to the conservation of the species, and areas outside of the geographical area occupied at the time of listing that are essential for the conservation of the species. We are proposing to designate as critical habitat all stream channels that we have determined are essential to the conservation of the eight species. These include streams that are currently occupied by one or more of the species, as well as some specific areas not currently occupied, but that were historically occupied, because we have determined that the additional areas are essential for the conservation of those species and that designating only occupied habitat is not sufficient to conserve them.

We began our analysis by considering historical and current ranges of each of the eight species. We used various sources including published literature and museum collection databases, as well as surveys, reports, and field notes prepared by biologists (see Background

section). We then identified the specific areas that are occupied by each of the eight mussels and that contain one or more of the PCEs. We defined occupied habitat as those stream reaches known to be currently occupied by any of the eight species. To identify the currently occupied stream reaches, we used post-1994 survey data. Several surveys were conducted in the basins between the years of 1995 to 2010 (Shelton 1995, 1999 unpub. data; Blalock–Herod *et al.* 2005; Pilarczyk *et al.* 2006, Shelton *et al.* 2007 unpub. data; Gangloff and Hartfield 2009). These surveys were used to assess the current conservation status of the species, and extended their known ranges. For this reason, we considered the year 1995 to be the demarcation between current and historical records. To identify the unoccupied stream reaches, we used survey data between the late 1800s and 1994. Therefore, if a species was known to occur in an area prior to 1995, but was not collected since then, the stream reach is considered unoccupied.

We then evaluated occupied stream reaches to delineate the probable upstream and downstream extent of each species' distribution. Known occurrences for some mussel species are extremely localized, and rare mussels can be difficult to locate. In addition, creek and river habitats are highly dependent upon upstream and downstream channel habitat conditions for their maintenance. Therefore, where more than one occurrence record of a particular species was found within a stream reach, we considered the entire reach between the uppermost and lowermost locations as occupied habitat.

We then considered whether this essential area was adequate for the conservation of each of the eight species. Small, isolated, aquatic populations are subject to chance catastrophic events and to changes in human activities and land use practices that may result in their elimination. Larger, more contiguous populations can reduce the threat of extinction due to habitat fragmentation and isolation. For these reasons, we believe that conservation of the Alabama pearlshell and southern kidneyshell requires expanding their ranges into currently unoccupied portions of their historical habitat. Given that threats to these two species are compounded by their limited distribution and isolation, it is unlikely that currently occupied habitat is adequate for their conservation. The range of each has been severely curtailed, their occupied habitats are limited and isolated, and population sizes are small. For example, the Alabama pearlshell is no longer believed to occur in the Limestone Creek system (Monroe County), several tributaries in the Murder Creek system, or in the Patsaliga Creek drainage. The southern kidneyshell once occurred in all three river basins, but is currently known only from the Choctawhatchee basin. While occupied units provide habitat for current populations, these species are at high risk of extirpation and extinction from stochastic events, whether periodic natural events or potential human-induced events (see ''Summary of Factors Affecting the Species''). The inclusion of essential unoccupied areas will provide habitat for population reintroduction and will decrease the risk of extinction. Based on the best scientific data available, we believe areas not currently occupied by the Alabama pearlshell and southern kidneyshell are essential for their conservation. However, we eliminated from consideration the Yellow River drainage as critical habitat for the southern kidneyshell. Its occurrence in the Yellow River is based on a 1919 collection of one specimen from Hollis Creek in Covington County, Alabama. We believe this single, historical collection is not sufficient to include any portions of the Yellow River drainage as essential to the conservation of the southern kidneyshell at this time. All of the stream habitat areas proposed as critical habitat that are currently not known to be occupied contain sufficient PBFs (e.g., geomorphically stable channels, perennial water flows, adequate water quality, and appropriate benthic substrates) to support life-history functions of the mussels. The stream reaches also lack major anthropogenic disturbance, and have potential for reoccupation by the species through future reintroduction efforts. Based on the above factors, all unoccupied stream reaches included in the proposed designations for the Alabama pearlshell and southern kidneyshell are essential to their conservation.

TABLE 1—OCCUPANCY AND STREAM LENGTH OF PROPOSED CRITICAL HABITAT UNITS BY SPECIES

Unit	Currently occupied?	Total stream length kilometers (miles)
Alabama pearlshell (*Margaritifera marrianae*)		
AP1: Big Flat Creek	Yes	92 (57)
AP2: Burnt Corn Creek, Murder Creek, and Sepulga River	Partially [1]	156 (97)
Total		248 (154)
Round ebonyshell (*Fusconaia rotulata*)		
GCM1: Lower Escambia-Conecuh	Yes	558 (347)
Southern sandshell (*Hamiota australis*)		
GCM3: Patsaliga Creek	Yes	149 (92)
GCM4: Upper Escambia-Conecuh River	Yes	137 (85)
GCM5: Yellow River	Yes	253 (157)
GCM6: Choctawhatchee River and Lower Pea River	Yes	892 (554)
GCM7: Upper Pea River	Yes	234 (145)
Total		1,665 (1,033)
Southern kidneyshell (*Ptychobranchus jonesi*)		
GCM1: Lower Escambia-Conecuh	No	558 (347)

TABLE 1—OCCUPANCY AND STREAM LENGTH OF PROPOSED CRITICAL HABITAT UNITS BY SPECIES—Continued

Unit	Currently occupied?	Total stream length kilometers (miles)
GCM3: Patsaliga Creek	No	149 (92)
GCM4: Upper Escambia-Conecuh River	No	137 (85)
GCM5: Choctawhatchee River and Lower Pea River	Yes	253 (157)
GCM7: Upper Pea River	Yes	234 (145)
Total		1,331 (826)
Choctaw bean (*Villosa choctawensis*)		
GCM1: Lower Escambia-Conecuh	Yes	558 (347)
GCM3: Patsaliga Creek	Yes	149 (92)
GCM4: Upper Escambia-Conecuh River	Yes	137 (85)
GCM5: Yellow River	Yes	253 (157)
GCM6: Choctawhatchee River and Lower Pea River	Yes	892 (554)
GCM7: Upper Pea River	Yes	234 (145)
Total		2,223 (1,380)
Tapered pigtoe (*Fusconaia burkei*)		
GCM6: Choctawhatchee River and Lower Pea River	Yes	892 (554)
GCM7: Upper Pea River	Yes	234 (145)
Total		1,126 (699)
Narrow pigtoe (*Fusconaia escambia*)		
GCM1: Lower Escambia-Conecuh	Yes	558 (347)
GCM2: Point A Lake and Gantt Lake Reservoirs	Yes	21 (13)
GCM3: Patsaliga Creek	Yes	149 (92)
GCM4: Upper Escambia-Conecuh River	Yes	137 (85)
GCM5: Yellow River	Yes	253 (157)
Total		1,118 (694)
Fuzzy pigtoe (*Pleurobema strodeanum*)		
GCM2: Lower Escambia-Conecuh	Yes	21 (13)
GCM3: Patsaliga Creek	Yes	149 (92)
GCM4: Upper Escambia-Conecuh River	Yes	137 (85)
GCM5: Yellow River	Yes	253 (157)
GCM6: Choctawhatchee River and Lower Pea River	Yes	892 (554)
GCM7: Upper Pea River	Yes	234 (145)
Total		1,686 (1,046)

[1] 17 km (11 mi) of Murder Creek mainstem are unoccupied.

Following the identification of occupied and unoccupied stream reaches, the next step was to delineate the probable upstream and downstream extent of each species' distribution. We used USGS 1:100,000 digital stream maps to delineate these boundaries of proposed critical habitat units according to the criteria explained below. The upstream boundary of a unit in a stream is the first perennial, named tributary confluence, a road-crossing bridge, or a permanent barrier to fish passage (such as a dam) above the upstream-most current occurrence record. Many of the Alabama pearlshell survey sites are located near watershed headwaters. In these areas, the upstream boundary of a unit is the point where the stream and its tributaries are no longer perennially flowing streams. The confluence of a tributary typically marks a significant change in the size of the stream and is a logical and recognizable upstream terminus. When a named tributary was not available, a road-crossing bridge was used to mark the boundary. Likewise, a dam or other barrier to fish passage marks the upstream extent to which mussels may disperse via their fish hosts. The downstream boundary of a unit in a stream is the confluence of a named tributary, the upstream extent of tidal influence, or the upstream extent of an impoundment, below the downstream-most occurrence record. In the unit descriptions, distances between landmarks marking the upstream or downstream extent of a stream segment are given in kilometers (km) and equivalent miles (mi), as measured tracing the course of the stream, not straight-line distance. Distances less than 10 km (6.2 mi) are rounded to the nearest half number; and distances of 10 km and greater are rounded to the nearest whole number.

Because mussels are naturally restricted by certain physical conditions within a stream or river reach (*i.e.,* flow, substrate), they may be unevenly distributed within these habitat units. Uncertainty on upstream and downstream distributional limits of some populations may have resulted in small areas of occupied habitat excluded from, or areas of unoccupied habitat included in, the designation. We recognize that both historical and recent collection records upon which we relied

are incomplete, and that there may be river segments or small tributaries not included in this proposed designation that harbor small, limited populations of one or more of the eight species considered in this designation, or that others may become suitable in the future. The exclusion of such areas does not diminish their potential individual or cumulative importance to the conservation of these species. However, we believe that, with proper management, each of the nine critical habitat units are capable of supporting one or more of these mussel species, and will serve as source populations for artificial reintroduction into designated stream units, as well as assisted or natural migration into adjacent undesignated streams within each basin. The habitat areas contained within the units described below constitute our best evaluation of areas needed for the conservation of these species at this time. Critical habitat may be revised for any or all of these species should new information become available.

Using the above criteria, we delineated a total of nine critical habitat units—two Alabama pearlshell units (AP1, AP2), and seven Gulf Coast mussels units (GCM1 through GCM7) for the other seven mussel species. We depicted the Alabama pearlshell units separately as this species tends to inhabit headwater stream environments and seldom co-occurs with the other seven species, although some critical habitat in the downstream portions of Unit AP2 overlaps with the upstream portions of Unit GCM1 in the Escambia River drainage. The round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe often co-occur within the same stream segments, so most of the GCM critical habitat units are designated for more than one species. Unit GCM2: Point A Lake and Gantt Lake Reservoirs is the only exception, and the unit is designated only for the narrow pigtoe.

When determining proposed critical habitat boundaries within this proposed rule, we made every effort to avoid including developed areas and other structures because these lack PCEs for the eight species. The areas proposed for critical habitat below include only stream channels within the ordinary high-water line and do not contain developed areas or structures. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this proposed rule have been excluded by text in the proposed rule and are not proposed for designation as critical habitat. Therefore, if the critical habitat is finalized as proposed, a Federal action involving these lands would not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the physical and biological features in the adjacent critical habitat.

Proposed Critical Habitat Designation

We are proposing nine habitat units encompassing 2,406 km (1,495 mi) of stream channel in Alabama and Florida for these eight freshwater mussel species. Unit name, location, and the approximate stream length of each proposed critical habitat unit are shown in Table 2. The proposed critical habitat units include the creek and river channels within the ordinary high-water line only. For this purpose, we have applied the definition found at 33 CFR 329.11, and consider the ordinary high-water line on nontidal rivers to be the line on the shore established by the fluctuations of water and indicated by physical characteristics, such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas.

States were granted ownership of lands beneath navigable waters up to the ordinary high-water line upon achieving statehood (*Pollard* v. *Hagan,* 44 U.S. (3 How.) 212 (1845)). Prior sovereigns or the States may have made grants to private parties that included lands below the ordinary high-water mark of some navigable waters that are included in this proposal. We believe that most, if not all, lands beneath the navigable waters included in this proposed rule are owned by the States of Alabama and Florida. The lands beneath most nonnavigable waters included in this proposed rule are in private ownership. Riparian lands along the waters are either in private ownership, or are owned by county, State, or Federal entities. Lands under county, State, and Federal ownership consist of managed conservation areas and Department of Defense lands, and are considered to have some level of protection. Table 2 identifies the approximate length of private and protected riparian lands.

TABLE 2—PROPOSED CRITICAL HABITAT UNITS, LOCATION, APPROXIMATE STREAM LENGTH, AND OWNERSHIP OF RIPARIAN LANDS

Unit	Location	Total length km (mi)	Private km (mi)*	Private/ protected km (mi)*	Protected km (mi)*
AP1	Big Flat Creek, AL	92 (57)	92 (57)	0	0
AP2	Burnt Corn Creek, Murder Creek, and Sepulga River, AL	156 (97)	156 (97)	0	0
GCM1	Lower Escambia River, AL, FL	558 (347)	482 (299)	18 (11)	59 (36)
GCM2	Point A Lake and Gantt Lake Reservoirs, AL	21 (13)	21 (13)	0	0
GCM3	Patsaliga Creek, AL	149 (92)	149 (92)	0	0
GCM4	Upper Escambia River, AL	137 (85)	130 (81)	7 (4)	0
GCM5	Yellow River, AL, FL	253 (157)	104 (64)	68 (42)	81 (50)
GCM6	Choctawhatchee and Lower Pea River, AL, FL	892 (554)	718 (446)	61 (38)	119 (74)
GCM7	Upper Pea River, AL	234 (145)	228 (142)	0	5 (3)
Overlap between units AP2 and GCM1		−85 (53)			
Total	2,406	(1,495)	1,993 (1239)	153 (95)	264 (164)

Note: Distances may not sum due to rounding.

*Ownership is categorized by private ownership on both banks of the river (Private); private on one bank and county, state or federal on the other (Private/Protected); and county, state, or federal on both banks (Protected).

Below we present brief descriptions of all units, and reasons why they meet the definition of critical habitat for each species. We also present any threats unique to the unit's features that may require special management of the PCEs. For each stream reach proposed as a critical habitat unit, the upstream and downstream boundaries are described generally below. More precise estimates are provided in the Regulation Promulgation section at the end of this proposed rule.

Unit AP1: Big Flat Creek Drainage, Alabama

Unit AP1 encompasses 92 km (57 mi) of the Big Flat Creek drainage, in Monroe and Wilcox Counties, AL. The unit is within the Mobile River basin. It includes the mainstem of Big Flat Creek from Hwy 41 upstream 56 km (35 mi), Monroe County, AL; Flat Creek from its confluence with Big Flat Creek upstream 20 km (12 mi), Monroe County, AL; and Dailey Creek from its confluence with Flat Creek upstream 17 km (11 mi), Wilcox County, AL.

Unit AP1 is proposed as critical habitat for the Alabama pearlshell. Based on collection records, the species was last collected in the Big Flat Creek system in 1995, when Shelton (1995, p. 3 unpub. data) documented a fresh dead individual. Although it is likely that the Alabama pearlshell has always been rare in Big Flat Creek, the unit currently supports healthy populations of several other native mussel species indicating the presence of PCEs 1, 2, 3, and 4. A diverse fish fauna, including potential fish host(s) for the Alabama pearlshell, are known from the Big Flat Creek drainage, indicating the potential presence of PCE 5.

Threats to the Alabama pearlshell and its habitat may require special management of the PCEs including maintaining natural stream flows and protecting water quality from excessive point- and non-point-source pollution. For example, runoff from agricultural and industrial sites can alter water quality through added nutrients and sediment. Runoff from unpaved roads can also add sediments, and poorly designed road culverts can degrade habitats and limit distribution of the species. Some culverts can isolate pearlshell populations by acting as a barrier for dispersion and movement of host fish(es).

Unit AP2: Burnt Corn Creek, Murder Creek, and Sepulga River Drainages, Alabama

Unit AP2 encompasses 156 km (97 mi) of the Burnt Corn Creek, Murder Creek, and Sepulga River drainages within the Escambia River drainage in Escambia and Conecuh Counties, AL. It includes the mainstem of Burnt Corn Creek from its confluence with Murder Creek upstream 66 km (41 mi), Conecuh County, AL; the mainstem of Murder Creek from its confluence with Jordan Creek upstream 17 km (11 mi) to the confluence of Otter Creek, Conecuh County, AL; Jordan Creek from its confluence with Murder Creek upstream 12 km (7 mi), Conecuh County, AL; Otter Creek from its confluence with Murder Creek upstream 9 km (5.5 mi), Conecuh County, AL; Hunter Creek from its confluence with Murder Creek upstream 8 km (5 mi), Conecuh County, AL; Sandy Creek from County Road 29 upstream 5 km (3.5 mi) to Hagood Road; two unnamed tributaries to Sandy Creek—one from its confluence with Sandy Creek upstream 8.5 km (5.0 mi) to Hagood Road and the other from its confluence with the previous unnamed tributary 2.5 km (1.5 mi) upstream to Hagood Road, Conecuh County, AL; Little Cedar Creek from County Road 6 upstream 8 km (5 mi), Conecuh County, AL; Amos Mill Creek from its confluence with the Sepulga River upstream 12 km (8 mi), Escambia and Conecuh Counties, AL; Polly Creek from its confluence with Amos Mill Creek upstream 3 km (2 mi), Conecuh County, AL; and Bottle Creek from its confluence with the Sepulga River upstream 5.5 km (3.5 mi) to County Road 42, Conecuh County, AL.

The Alabama pearlshell currently occurs in Jordan, Hunter, Otter, Sandy, and Little Cedar, Bottle, and Amos Mill Creek drainages. Although it historically occurred in the mainstem of Murder Creek, it has not been collected there in recent years. Therefore, this short reach of Murder Creek is considered unoccupied by the Alabama pearlshell, but essential to the conservation of the species. This unoccupied reach retains the features of a natural stream channel and supports other native mussel species. It has potential for reoccupation by the pearlshell, particularly if threats can be identified and mitigated.

The unit currently supports healthy populations of several other native mussel species indicating the presence of PCEs 1, 2, 3, and 4. In addition, other mussel species, requiring similar PCEs, co-occur with the pearlshell. A diverse fish fauna, including potential fish host(s) for the Alabama pearlshell, are known from these drainages, indicating the potential presence of PCE 5.

Threats to the Alabama pearlshell and its habitat may require special management of the PCEs including, alteration of natural stream flows, maintaining natural stream flows (including the construction of impoundments), and protecting water quality from excessive point- and non-point-source pollution.

Unit GCM1: Lower Escambia River Drainage, Florida and Alabama

Unit GCM1 encompasses 558 km (347 mi) of the lower Escambia River mainstem and 12 tributary streams in Escambia and Santa Rosa Counties, FL; and Escambia, Covington, Conecuh, and Butler Counties, AL. The unit consists of the main channel of the Escambia-Conecuh River from the confluence of Spanish Mill Creek, Escambia and Santa Rosa Counties, FL, upstream 204 km (127 mi) to the Point A Lake dam, Covington County, AL; Murder Creek from its confluence with the Conecuh River, Escambia County, AL, upstream 62 km (38 mi) to the confluence of Cane Creek, Conecuh County, AL; Burnt Corn Creek from its confluence with Murder Creek, Escambia County, AL, upstream 59 km (37 mi) to County Road 20, Conecuh County, AL; Jordan Creek from its confluence with Murder Creek, upstream 5.5 km (3.5 mi) to Interstate 65, Conecuh County, AL; Mill Creek from its confluence with Murder Creek upstream 2.5 km (1.5 mi) to the confluence of Sandy Creek, Conecuh County, AL; Sandy Creek from its confluence with Mill Creek upstream 5.5 km (3.5 mi) to County Road 29, Conecuh County, AL; Sepulga River from its confluence with the Conecuh River upstream 69 km (43 mi) to the confluence of Persimmon Creek, Conecuh County, AL; Bottle Creek from its confluence with the Sepulga River upstream 5.5 km (3.5 mi) to County Road 42, Conecuh County, AL; Persimmon Creek from its confluence with the Sepulga River, Conecuh County upstream 36 km (22 mi) to the confluence of Mashy Creek, Butler County, AL; Panther Creek from its confluence with Persimmon Creek upstream 11 km (7 mi) to State Route 106, Butler County, AL; Pigeon Creek from its confluence with the Sepulga River, Conecuh and Covington Counties upstream 89 km (55 mi) to the confluence of Three Run Creek, Butler County, AL; and Three Run Creek from its confluence with Pigeon Creek upstream 9 km (5.5 mi) to the confluence of Spring Creek, Butler County, AL.

Unit GCM1 is proposed as critical habitat for the round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, narrow pigtoe, and fuzzy pigtoe. The southern kidneyshell is not currently known to occur in the unit; however, this portion of the Escambia River system is within

the species' historical range, and we consider it essential to the southern kidneyshell's conservation due to the need to re-establish the species within other portions of its historical range in order to reduce threats from stochastic events. The unit currently supports populations of round ebonyshell, southern sandshell, Choctaw bean, narrow pigtoe, and fuzzy pigtoe indicating the presence of PCEs 1, 2, 3, and 4. In addition, other mussel species, requiring similar PCEs, co-occur with these five species. A diverse fish fauna, including potential fish host(s) for the fuzzy pigtoe, are known from the Escambia River drainage, indicating the potential presence of PCE 5.

Threats to the five species and their habitat that may require special management of the PCEs include the potential of significant changes in the existing flow regime and water quality due to two upstream impoundments. As discussed in Summary of Factors Affecting the Species, under Dams and Impoundments, mollusk declines below dams are associated with changes and fluctuation in flow regime, scouring and erosion, reduced dissolved oxygen levels and water temperatures, and changes in resident fish assemblages. These alterations can cause mussel declines for many miles below the dam.

Unit GCM2: Point A Lake and Gantt Lake Reservoirs, Alabama

Unit GCM2 encompasses 21 km (13 mi) of the Point A Lake and Gantt Lake reservoir system in Covington County, AL. Both lakes are impoundments on the Conecuh River main channel in the Escambia River drainage. The unit extends from Point A Lake dam, Covington County upstream 21 km (13 mi) to the Covington-Crenshaw County line in Alabama.

Unit GCM2 is proposed as critical habitat for the narrow pigtoe. As mentioned in the PCEs for the narrow pigtoe (above), we attribute its occurrence in these two impoundments to the small size of the reservoirs and to the operational regime of the dams. This allows for water movement through the system, and prevents silt accumulation in some areas. The largest narrow pigtoe population occurs in the middle reach of Gantt Lake, where the reservoir narrows and becomes somewhat riverine. Although the natural state of the river's hydrological flow regime is modified, it does retain the features necessary to maintain the benthic habitats where the species are found. The persistence of the narrow pigtoe within these reservoirs indicates the presence of an appropriate fish host. Although its fish host(s) is unknown, other mussels of the genus *Fusconaia* are known to use cyprinid minnows, a fish species that occupies a variety of habitats including large, flowing rivers, and lakes and reservoirs (Mettee *et al.* 1996, p. 128). The unit currently supports narrow pigtoe populations, indicating the presence of PCEs 1, 3, 4, and 5. We consider the habitat in this unit essential to the conservation of the narrow pigtoe as it possesses the largest known population. The fuzzy pigtoe is known from this stretch of the Conecuh River (one specimen was collected in 1915). However, the collection was made prior to construction of the reservoirs in 1923, and it is not presently known to occur in this now-impounded section of the river.

Threats to the narrow pigtoe and its habitat that may require special management of the PCEs include the potential of significant changes in water levels due to periodic drawdowns of the reservoirs for maintenance to the dams. Within the two reservoirs, mussels occur in shallow areas near the shore, where they are susceptible to exposure when water levels are lowered. A drawdown of Point A Lake in 2005 and Gantt Lake in 2006 exposed and killed a substantial number of mussels (Johnson 2006a *in litt.;* Johnson 2006b *in litt.*). During the Gantt drawdown, 142 individuals of narrow pigtoe were relocated after being stranded in dewatered areas near the shoreline (Garner 2009 pers. comm.; Pursifull 2006 pers. obs.).

Unit GCM3: Patsaliga Creek Drainage, Alabama

Unit GCM3 encompasses 149 km (92 mi) of Patsaliga Creek and two tributary streams in Covington, Crenshaw, and Pike Counties, AL, within the Escambia River basin. The unit consists of the Patsaliga Creek mainstem from its confluence with Point A Lake at County Road 59, Covington County, AL, upstream 108 km (67 mi) to Crenshaw County Road 66–Pike County Road 1 (the creek is the county boundary), AL; Little Patsaliga Creek from its confluence with Patsaliga Creek upstream 28 km (17 mi) to Mary Daniel Road, Crenshaw County, AL; and Olustee Creek from its confluence with Patsaliga Creek upstream 12 km (8 mi) to County Road 5, Pike County, AL.

Unit GCM3 is proposed as critical habitat for the southern sandshell, southern kidneyshell, Choctaw bean, narrow pigtoe, and fuzzy pigtoe. The southern kidneyshell is not currently known to occur in the unit; however, this portion of the Patsaliga Creek system is within the species' historical range. We consider it essential to the conservation of the southern kidneyshell due to the need to re-establish the species within other portions of its historical range in order to reduce threats from stochastic events. The unit does currently support populations of southern sandshell, Choctaw bean, narrow pigtoe, and fuzzy pigtoe indicating the presence of PCEs 1, 2, 3, and 4. In addition, other mussel species, requiring similar PCEs, co-occur with these four species. A diverse fish fauna, including a potential fish host for the fuzzy pigtoe, are known from the Patsaliga Creek drainage, indicating the potential presence of PCE 5.

Prior to construction of the Point A Lake and Gantt Lake dams in 1923, Patsaliga Creek drained directly to the Conecuh River main channel. It now empties into Point A Lake and is effectively isolated from the main channel by the dams. The dams are barriers to upstream fish movement, particularly to anadromous fishes. Therefore, a potential threat that may require special management of the PCEs includes the absence of fish hosts.

Unit GCM4: Upper Escambia River Drainage, Alabama

Unit GCM4 encompasses 137 km (85 mi) of the Conecuh River mainstem and two tributary streams in Covington, Crenshaw, Pike, and Bullock Counties, AL, within the Escambia River drainage. The unit consists of the Conecuh River from its confluence with Gantt Lake reservoir at the Covington-Crenshaw County line upstream 126 km (78 mi) to County Road 8, Bullock County, AL; Beeman Creek from its confluence with the Conecuh River upstream 6.5 km (4 mi) to the confluence of Mill Creek, Pike County, AL; and Mill Creek from its confluence with Beeman Creek, upstream 4.5 km (3 mi) to County Road 13, Pike County, AL.

Unit GCM4 is proposed as critical habitat for the southern sandshell, southern kidneyshell, Choctaw bean, narrow pigtoe, and fuzzy pigtoe. The southern kidneyshell is not currently known to occur in the unit; however, this portion of the Conecuh River is within the species' historical range, and we consider it to be essential to the conservation of the southern kidneyshell due to the need to re-establish the species within other portions of its historical range in order to reduce threats from stochastic events. The unit does currently support populations of southern sandshell, Choctaw bean, narrow pigtoe, and fuzzy pigtoe indicating the presence of PCEs 1, 2, 3, and 4. In addition, other mussel species requiring similar PCEs co-occur

with these four species. A diverse fish fauna, including a potential fish host for the fuzzy pigtoe, are known from the upper Escambia River drainage, indicating the potential presence of PCE 5.

The Point A Lake and Gantt Lake dams on the Conecuh River mainstem are barriers to upstream fish movement, particularly to anadromous fishes. Therefore, a potential threat that may require special management of the PCEs includes the absence of fish hosts.

Unit GCM5: Yellow River Drainage, Florida and Alabama

Unit GCM5 encompasses 253 km (157 mi) of the Yellow River mainstem, the Shoal River mainstem and three tributary streams in Santa Rosa, Okaloosa, and Walton Counties, FL; and Covington County, AL. The unit consists of the Yellow River from the confluence of Weaver River, (a tributary located 0.9 km (0.6 mi) downstream of State Route 87), Santa Rosa County, FL, upstream 157 km (97 mi) to County Road 42, Covington County, AL; the Shoal River from its confluence with the Yellow River, Okaloosa County, FL, upstream 51 km (32 mi) to the confluence of Mossy Head Branch, Walton County, FL; Pond Creek from its confluence with the Shoal River, Okaloosa County, FL, upstream 24 km (15 mi) to the confluence of Fleming Creek, Walton County, FL; Five Runs Creek from its confluence with the Yellow River upstream 15 km (9.5 mi) to County Road 31, Covington County, AL; and Hollis Creek from its confluence with the Yellow River upstream 5.5 km (3.5 mi) to County Road 42, Covington County, AL.

Unit GCM5 is proposed as critical habitat for the southern sandshell, Choctaw bean, narrow pigtoe, and fuzzy pigtoe. The southern kidneyshell is known from the Yellow River drainage; however, its occurrence in the basin is based on the collection of one specimen in 1919 from Hollis Creek in Alabama. We believe this single, historical record is not sufficient to consider this unit as essential to the conservation of the southern kidneyshell. Therefore, we are not designating Unit GCM5 as critical habitat for the southern kidneyshell at this time. The unit does currently support populations of southern sandshell, Choctaw bean, narrow pigtoe, and fuzzy pigtoe indicating the presence of PCEs 1, 2, 3, and 4. In addition, other mussel species, requiring similar PCEs, co-occur with these four species. A diverse fish fauna are known from the Yellow River drainage, indicating the potential presence of PCE 5.

Unit GCM6: Choctawhatchee River and Lower Pea River Drainages, Florida and Alabama

Unit GCM6 encompasses 892 km (554 mi) of the Choctawhatchee River mainstem, the lower Pea River mainstem, and 29 tributary streams in Walton, Washington, Bay, Holmes, and Jackson Counties, FL; and Geneva, Coffee, Dale, Houston, Henry, Pike, and Barbour Counties, AL. The unit consists of the Choctawhatchee River from the confluence of Pine Log Creek, Walton County, FL upstream 200 km (125 mi) to the point the river splits into the West Fork Choctawhatchee and East Fork Choctawhatchee Rivers, Barbour County, AL; Pine Log Creek from its confluence with the Choctawhatchee River, Walton County, upstream 19 km (12 mi) to the confluence of Ditch Branch, Washington and Bay Counties, FL; an unnamed channel forming Cowford Island from its downstream confluence with the Choctawhatchee River upstream 3 km (2 mi) to its upstream confluence with the river, Washington County, FL; Crews Lake from its western terminus 1.5 km (1 mi) to its eastern terminus, Washington County, FL (Crews Lake is a relic channel southwest of Cowford Island, and is disconnected from the Cowford Island channel, except during high flows); Holmes Creek from its confluence with the Choctawhatchee River, Washington County, FL, upstream 98 km (61 mi) to County Road 4, Geneva County, AL; Alligator Creek from its confluence with Holmes Creek upstream 6.5 km (4 mi) to County Road 166, Washington County, FL; Bruce Creek from its confluence with the Choctawhatchee River upstream 25 km (16 mi) to the confluence of an unnamed tributary, Walton County, FL; Sandy Creek from its confluence with the Choctawhatchee River, Walton County upstream 30 km (18 mi) to the confluence of West Sandy Creek, Walton County, FL; Blue Creek from its confluence with Sandy Creek, upstream 7 km (4.5 mi) to the confluence of Goose Branch, Holmes County, FL; West Sandy Creek from its confluence with Sandy Creek, upstream 5.5 km (3.5 mi) to the confluence of an unnamed tributary, Walton County, FL; Wrights Creek from its confluence with the Choctawhatchee River, Holmes County, FL, upstream 43 km (27 mi) to County Road 4, Geneva County, AL; Tenmile Creek from its confluence with Wrights Creek upstream 6 km (3.5 mi) to the confluence of Rice Machine Branch, Holmes County, FL; West Pittman Creek from its confluence with the Choctawhatchee River upstream 6.5 km (4 mi) to Fowler Branch, Holmes County, FL; East Pittman Creek from its confluence with the Choctawhatchee River upstream 4.5 km (3 mi) to County Road 179, Holmes County, FL; Parrot Creek from its confluence with the Choctawhatchee River upstream 6 km (4 mi) to Tommy Lane, Holmes County, FL; the Pea River from its confluence with the Choctawhatchee River, Geneva County upstream 91 km (57 mi) to the Elba Dam, Coffee County, AL; Limestone Creek from its confluence with the Pea River upstream 8.5 km (5 mi) to Woods Road, Walton County, FL; Flat Creek from the Pea River upstream 17 km (10 mi) to the confluence of Panther Creek, Geneva County, AL; Eightmile Creek from its confluence with Flat Creek, Geneva County, AL, upstream 15 km (9 mi) to the confluence of Dry Branch (first tributary upstream of County Road 181), Walton County, FL; Corner Creek from its confluence with Eightmile Creek upstream 5 km (3 mi) to State Route 54, Geneva County, AL; Natural Bridge Creek from its confluence with Eightmile Creek Geneva County, AL, upstream, 4 km (2.5 mi) to the Covington-Geneva County line, AL; Double Bridges Creek from the Choctawhatchee River, Geneva County upstream 46 km (29 mi) to the confluence of Blanket Creek, Coffee County, AL; Claybank Creek from the Choctawhatchee River, Geneva County upstream 22 km (14 mi) to the Fort Rucker military reservation southern boundary, Dale County, AL; Claybank Creek from the Fort Rucker military reservation northern boundary, upstream 6 km (4 mi) to County Road 36, Dale County, AL; Steep Head Creek from the Fort Rucker military reservation western boundary, upstream 4 km (2.5 mi) to County Road 156, Coffee County, AL; Hurricane Creek from its confluence with the Choctawhatchee River upstream 14 km (8.5 mi) to State Route 52, Geneva County, AL; Little Choctawhatchee River from its confluence with the Choctawhatchee River, Dale and Houston Counties upstream 20 km (13 mi) to the confluence of Newton Creek, Houston County, AL; Panther Creek from its confluence with the Little Choctawhatchee River, upstream 4.5 km (2.5 mi) to the confluence of Gilley Mill Branch, Houston County, AL; Bear Creek from its confluence with the Little Choctawhatchee River, upstream 5.5 km (3.5 mi) to County Road 40 (Fortner Street), Houston County, AL; West Fork Choctawhatchee River from its confluence with the Choctawhatchee River, Dale County upstream 54 km (33 mi) to the fork of Paul's Creek and

Lindsey Creek, Barbour County, AL; Judy Creek from its confluence with West Fork Choctawhatchee River upstream 17 km (11 mi) to County Road 13, Dale County, AL; Sikes Creek from its confluence with West Fork Choctawhatchee River, Dale County upstream 8.5 km (5.5 mi) to State Route 10, Barbour County, AL; Paul's Creek from its confluence with West Fork Choctawhatchee River upstream 7 km (4.5 mi) to one mile upstream of County Road 20, Barbour County, AL; Lindsey Creek from its confluence with West Fork Choctawhatchee River upstream 14 km (8.5 mi) to the confluence of an unnamed tributary, Barbour County, AL; an unnamed tributary to Lindsey Creek from its confluence with Lindsey Creek upstream 2.5 km (1.5 mi) to 1.0 mile upstream of County Road 53, Barbour County, AL; and East Fork Choctawhatchee River from its confluence with Choctawhatchee River, Dale County upstream 71 km (44 mi) to County Road 71, Barbour County, AL.

Unit GCM6 is proposed as critical habitat for the southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, and fuzzy pigtoe. The unit currently supports populations of the five species and other mussel species requiring similar PCEs, indicating the presence of PCEs 1, 2, 3, and 4. A diverse fish fauna is known from the Choctawhatchee River, including a potential fish host for the fuzzy pigtoe and tapered pigtoe, indicating the potential presence of PCE 5.

Not included in this unit are two oxbow lakes now disconnected from the Choctawhatchee River main channel in Washington County, FL. Horseshoe Lake has a record of the southern kidneyshell from 1932, and Crawford Lake has records of the Choctaw bean and tapered pigtoe from 1934. It is possible these oxbow lakes had some connection to the main channel when the collections were made over 75 years ago. The three species are not currently known to occur in Horseshoe or Crawford lakes, and we do not consider them essential to the conservation of the southern kidneyshell, Choctaw bean, or tapered pigtoe.

Threats to the five species and their habitat that may require special management of the PCEs include the potential of significant changes in the existing flow regime and water quality due to the Elba dam on the Pea River mainstem. As discussed in Summary of Factors Affecting the Species, under Dams and Impoundments, mollusk declines below dams are associated with changes and fluctuation in flow regime, scouring and erosion, reduced dissolved oxygen levels and water temperatures, and changes in resident fish assemblages. These alterations can cause mussel declines for many miles below the dam.

Unit GCM7: Upper Pea River Drainage, Alabama

Unit GCM7 encompasses 234 km (145 mi) of the upper Pea River mainstem and six tributary streams in Coffee, Dale, Pike, Barbour, and Bullock Counties, AL. This unit is within the Choctawhatchee River basin and includes the stream segments upstream of the Elba dam. The unit consists of the Pea River from the Elba dam, Coffee County upstream 123 km (76 mi) to State Route 239, Bullock and Barbour Counties, AL; Whitewater Creek from its confluence with the Pea River, Coffee County upstream 45 km (28 mi) to the confluence of Walnut Creek, Pike County, AL; Walnut Creek from its confluence with Whitewater Creek upstream 14 km (9 mi) to County Road 26, Pike County, AL; Big Creek (Coffee County Big Creek) from its confluence with Whitewater Creek, Coffee County upstream 30 km (18 mi) to the confluence of Smart Branch, Pike County, AL; Big Creek (Barbour County Big Creek) from its confluence with the Pea River upstream 10 km (6 mi) to the confluence of Sand Creek, Barbour County, AL; Pea Creek from its confluence with the Pea River upstream 6 km (4 mi) to the confluence of Hurricane Creek, Barbour County, AL; and Big Sandy Creek from its confluence with the Pea River upstream 6.5 km (4 mi) to County Road 14, Bullock County, AL.

Unit GCM7 is proposed as critical habitat for the southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, and fuzzy pigtoe. The unit currently supports populations of the five species, and other mussel species requiring similar PCEs, indicating the presence of PCEs 1, 2, 3, and 4. A diverse fish fauna is known from the upper Pea River, including potential fish host(s) for the fuzzy pigtoe and tapered pigtoe, indicating the potential presence of PCE 5.

The Elba dam on the Pea River mainstem is a barrier to upstream fish movement, particularly to anadromous fishes. Therefore, a potential threat that may require special management of the PCEs includes the absence of potential host fishes.

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. In addition, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of proposed critical habitat.

Decisions by the 5th and 9th Circuit Courts of Appeal have invalidated our regulatory definition of ''destruction or adverse modification'' (50 CFR 402.02) (see *Gifford Pinchot Task Force* v. *U.S. Fish and Wildlife Service,* 378 F. 3d 1059 (9th Cir. 2004) and *Sierra Club* v. *U.S. Fish and Wildlife Service,* 245 F.3d 434, 442 (5th Cir. 2001)), and we do not rely on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Under the statutory provisions of the Act, we determine destruction or adverse modification on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions on State, tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat, and actions on State, tribal, local, or private lands that are not federally funded or authorized, do not require section 7 consultation.

As a result of section 7 consultation, we document compliance with the requirements of section 7(a)(2) through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect, or are likely to

adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define ''reasonable and prudent alternatives'' (at 50 CFR 402.02) as alternative actions identified during consultation that:

(1) Can be implemented in a manner consistent with the intended purpose of the action;

(2) Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction;

(3) Are economically and technologically feasible; and

(4) Would, in the Director's opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where we have listed a new species or subsequently designated critical habitat that may be affected and the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law). Consequently, Federal agencies sometimes may need to request reinitiation of consultation with us on actions for which formal consultation has been completed, if those actions with discretionary involvement or control may affect subsequently listed species or designated critical habitat.

Application of the ''Adverse Modification'' Standard

The key factor related to the adverse modification determination is whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species. Activities that may destroy or adversely modify critical habitat are those that alter the physical or biological features to an extent that appreciably reduces the conservation value of critical habitat for Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, or fuzzy pigtoe. As discussed above, the role of critical habitat is to support life-history needs and provide for the conservation of these species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may destroy or adversely modify such habitat, or that may be affected by such designation.

Activities that may affect critical habitat, when carried out, funded, or authorized by a Federal agency, should result in consultation for the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, or fuzzy pigtoe. These activities include, but are not limited to:

(1) Actions that would alter the geomorphology of their stream and river habitats. Such activities could include, but are not limited to, instream excavation or dredging, impoundment, channelization, and discharge of fill materials. These activities could cause aggradation or degradation of the channel bed elevation or significant bank erosion and result in entrainment or burial of these mussels, and could cause other direct or cumulative adverse effects to these species and their life cycles.

(2) Actions that would significantly alter the existing flow regime. Such activities could include, but are not limited to; impoundment, water diversion, water withdrawal, water draw-down, and hydropower generation. These activities could eliminate or reduce the habitat necessary for growth and reproduction of these mussels.

(3) Actions that would significantly alter water chemistry or water quality (for example, temperature, pH, contaminants, and excess nutrients). Such activities could include, but are not limited to, hydropower discharges, or the release of chemicals, biological pollutants, or heated effluents into surface water or connected groundwater at a point source or by dispersed release (non-point source). These activities could alter water conditions that are beyond the tolerances of these mussels and result in direct or cumulative adverse effects to the species and their life cycles.

(4) Actions that would significantly alter stream bed material composition and quality by increasing sediment deposition or filamentous algal growth. Such activities could include, but are not limited to, construction projects, livestock grazing, timber harvest, and other watershed and floodplain disturbances that release sediments or nutrients into the water. These activities could eliminate or reduce habitats necessary for the growth and reproduction of these mussels by causing excessive sedimentation and burial of the species or their habitats, or nutrification leading to excessive filamentous algal growth. Excessive filamentous algal growth can cause reduced nighttime dissolved oxygen levels through respiration, and prevent juvenile mussels from settling into stream sediments.

Exemptions

Application of Section 4(a)(3) of the Act

The Sikes Act Improvement Act of 1997 (Sikes Act) (16 U.S.C. 670a) required each military installation that includes land and water suitable for the conservation and management of natural resources to complete an integrated natural resource management plan (INRMP) by November 17, 2001. An INRMP integrates implementation of the military mission of the installation with stewardship of the natural resources found on the base. Each INRMP includes:

(1) An assessment of the ecological needs on the installation, including the need to provide for the conservation of listed species;

(2) A statement of goals and priorities;

(3) A detailed description of management actions to be implemented to provide for these ecological needs; and

(4) A monitoring and adaptive management plan.

Among other things, each INRMP must, to the extent appropriate and applicable, provide for fish and wildlife management; fish and wildlife habitat enhancement or modification; wetland protection, enhancement, and restoration where necessary to support fish and wildlife; and enforcement of applicable natural resource laws.

The National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108–136) amended the Act to limit areas eligible for designation as critical habitat. Specifically, section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) now provides: ''The Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared

under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation.''

The U.S. Army-operated Fort Rucker Aviation Center, located in Daleville, AL, owns lands that include portions of the proposed critical habitat designation (specifically unit GCM6, Choctawhatchee River and Lower Pea River Drainage). Portions of Claybank and Steep Head Creeks are on lands within the Fort Rucker military reservation. Fort Rucker has completed an INRMP (BioResources 2007) that guides conservation activities on the installation through 2014. This INRMP does not mention any of the southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, and fuzzy pigtoe by name, but does specifically address maintaining and improving water quality through reduction in sedimentation and erosion control, land management practices, and improved treatment facilities (BioResources 2007, pp. 82–83, p. 90, pp.128–129). Based on the above considerations, and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that the identified lands are subject to the Fort Rucker INRMP and that conservation efforts identified in the INRMP will provide a benefit to the southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, and fuzzy pigtoe occurring in habitats within or downstream of the Fort Rucker military reservation. Therefore, lands within this installation are exempt from critical habitat designation under section 4(a)(3) of the Act. Pursuant to this exemption, we are not including approximately 16 mi (25 km) of stream habitat in this proposed critical habitat designation.

Eglin Air Force Base (AFB), located in Niceville, FL, owns the lands adjacent to the proposed critical habitat designation (specifically unit GCM5, Yellow River Drainage). The lower portions of the Shoal and Yellow Rivers form the northwestern boundary of the military reservation. However, no portions of stream or river channels proposed for critical habitat designation occur within the boundary of the military reservation, and therefore are not proposed for exemption. These reaches are also currently designated critical habitat for the Gulf sturgeon (*Acipenser oxyrinchus desotoi*) (68 FR 13370).

Exclusions

Application of Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making that determination, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor.

Under section 4(b)(2) of the Act, we may exclude an area from designated critical habitat based on economic impacts, impacts on national security, or any other relevant impacts. In considering whether to exclude a particular area from the designation, we identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and evaluate whether the benefits of exclusion outweigh the benefits of inclusion. If the analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, the Secretary may exercise his discretion to exclude the area only if such exclusion would not result in the extinction of the species.

Economic Impacts

Under section 4(b)(2) of the Act, we consider the economic impacts of specifying any particular area as critical habitat. In order to consider economic impacts, we are preparing an analysis of the economic impacts of the proposed critical habitat designation and related factors.

We will announce the availability of the draft economic analysis as soon as it is completed, at which time we will seek public review and comment. At that time, copies of the draft economic analysis will be available for downloading from the Internet at *http://www.regulations.gov,* or by contacting the Panama City, FL, Fish and Wildlife Office directly (see **FOR FURTHER INFORMATION CONTACT** section). During the development of a final designation, we will consider economic impacts, public comments, and other new information, and areas may be excluded from the final critical habitat designation under section 4(b)(2) of the Act and our implementing regulations at 50 CFR 424.19.

National Security Impacts

Under section 4(b)(2) of the Act, we consider whether there are lands owned or managed by the Department of Defense where a national security impact might exist. In preparing this proposal, we have determined that some lands owned by the Department of Defense (Fort Rucker Army Aviation Center) are within the proposed designation of critical habitat for these eight mussels. However, this installation has a completed INRMP that provides for the conservation of aquatic fish and wildlife and their habitats, and therefore stream sections within the installation are already exempted from the definition of critical habitat under Section 4(a)(3)(B)(i) (see Exemptions above) so that there is no need to propose them for exclusion under Section 4(b)(2) based on national security impact. We have also proposed portions of the Yellow and Shoal Rivers that form the northwestern boundary of Eglin Air Force Base as critical habitat. However, these rivers are adjacent to the installation and not owned by the Department of Defense. Therefore, we do not propose to exclude them under Section 4(b)(2) based on national security concerns.

Other Relevant Impacts

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security. We consider a number of factors, including whether the landowners have developed any HCPs or other management plans for the area, or whether there are conservation partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at any tribal issues, and consider the government-to-government relationship of the United States with tribal entities. We also consider any social impacts that might occur because of the designation.

In preparing this proposal, we have determined that there are currently no HCPs or other management plans for the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe, and the proposed designation does not include any tribal lands or trust resources. We anticipate no impact on tribal lands, partnerships, or HCPs from this proposed critical habitat designation. Accordingly, the Secretary does not propose to exert his discretion to exclude any areas from the final designation based on other relevant impacts.

Peer Review

In accordance with our joint policy on peer review published in the **Federal Register** on July 1, 1994 (59 FR 34270), we will seek the expert opinions of at least three appropriate and independent specialists regarding this proposed rule. The purpose of peer review is to ensure that our critical habitat designation is based on scientifically sound data, assumptions, and analyses. We have invited these peer reviewers to comment during this public comment period on our specific assumptions and conclusions in this proposed designation of critical habitat.

We will consider all comments and information received during this comment period on this proposed rule during our preparation of a final determination. Accordingly, the final decision may differ from this proposal.

Public Hearings

Section 4(b)(5) of the Act provides for one or more public hearings on this proposal, if requested. Requests must be received within 45 days after the date of publication of this proposed rule in the **Federal Register**. Such requests must be sent to the address shown in the **ADDRESSES** section. We will schedule public hearings on this proposal, if any are requested, and announce the dates, times, and places of those hearings, as well as how to obtain reasonable accommodations, in the **Federal Register** and local newspapers at least 15 days before the hearing.

Required Determinations

Regulatory Planning and Review—Executive Order 12866

The Office of Management and Budget (OMB) has determined that this rule is not significant and has not reviewed this proposed rule under Executive Order 12866 (E.O. 12866). OMB bases its determination upon the following four criteria:

(1) Whether the rule will have an annual effect of $100 million or more on the economy or adversely affect an economic sector, productivity, jobs, the environment, or other units of the government.

(2) Whether the rule will create inconsistencies with other Federal agencies' actions.

(3) Whether the rule will materially affect entitlements, grants, user fees, loan programs, or the rights and obligations of their recipients.

(4) Whether the rule raises novel legal or policy issues.

Regulatory Flexibility Act

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 *et seq.,* as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996), whenever an agency must publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended RFA to require Federal agencies to provide a statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

At this time, we lack the available economic information necessary to provide an adequate factual basis for the required RFA finding. Therefore, we defer the RFA finding until completion of the draft economic analysis prepared under section 4(b)(2) of the Act and E.O. 12866. This draft economic analysis will provide the required factual basis for the RFA finding. Upon completion of the draft economic analysis, we will announce availability of the draft economic analysis of the proposed designation in the **Federal Register** and reopen the public comment period for the proposed designation. We will include with this announcement, as appropriate, an initial regulatory flexibility analysis or a certification that the rule will not have a significant economic impact on a substantial number of small entities accompanied by the factual basis for that determination. This includes information on hydroelectric generation, transportation, mining, permitted discharges, as well as other economic factors within the Escambia, Yellow, and Choctawhatchee River basins. We have concluded that deferring the RFA finding until completion of the draft economic analysis is necessary to meet the purposes and requirements of the RFA. Deferring the RFA finding in this manner will ensure that we make a sufficiently informed determination based on adequate economic information and provide the necessary opportunity for public comment.

Unfunded Mandates Reform Act

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq.*), we make the following findings:

(a) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or tribal governments, or the private sector, and includes both ''Federal intergovernmental mandates'' and ''Federal private sector mandates.'' These terms are defined in 2 U.S.C. 658(5)–(7). ''Federal intergovernmental mandate'' includes a regulation that ''would impose an enforceable duty upon State, local, or [T]ribal governments'' with two exceptions. It excludes ''a condition of Federal assistance.'' It also excludes ''a duty arising from participation in a voluntary Federal program,'' unless the regulation ''relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and [T]ribal governments under entitlement authority,'' if the provision would ''increase the stringency of conditions of assistance'' or ''place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding,'' and the State, local, or tribal governments ''lack authority'' to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; AFDC work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. ''Federal private sector mandate'' includes a regulation that ''would impose an enforceable duty upon the private sector, except (i) A condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.''

The designation of critical habitat does not impose a legally binding duty on non-Federal entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the

Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(b) We do not believe that the proposed designation of critical habitat for the Alabama pearlshell, round ebonyshell, southern kidneyshell, southern sandshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe will significantly or uniquely affect small governments because these mussel species occur primarily in State-owned river channels, or in remote privately owned stream channels. As such, a Small Government Agency Plan is not required. We will, however, further evaluate this issue as we conduct our economic analysis and revise this assessment if appropriate.

Takings

In accordance with E.O. 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe in a takings implications assessment. The takings implications assessment concludes that this designation of critical habitat for the eight species does not pose significant takings implications for lands within or affected by the designation.

Federalism

In accordance with E.O. 13132 (Federalism), this proposed rule does not have significant Federalism effects. A Federalism assessment is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of, this proposed critical habitat designation with appropriate State resource agencies in Alabama and Florida. The designation may have some benefit to these governments because the areas that contain the physical and biological features essential to the conservation of the species are more clearly defined, and the features of the habitat necessary to the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist local governments in long-range planning (rather than having them wait for case-by-case section 7 consultations to occur).

Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) would be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

Civil Justice Reform

In accordance with E.O. 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We have proposed designating critical habitat in accordance with the provisions of the Act. This proposed rule uses standard property descriptions and identifies the physical and biological features within the designated areas to assist the public in understanding the habitat needs of the Alabama pearlshell, round ebonyshell, southern kidneyshell, southern sandshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe.

Paperwork Reduction Act of 1995

This rule does not contain any new collections of information that require approval by OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). This rule will not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act (NEPA)

It is our position that, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses as defined by NEPA (42 U.S.C. 4321 *et seq.*) in connection with listing a species or designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County* v. *Babbitt,* 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)).

Clarity of the Rule

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

(a) Be logically organized;

(b) Use the active voice to address readers directly;

(c) Use clear language rather than jargon;

(d) Be divided into short sections and sentences; and

(e) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in the **ADDRESSES** section. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, Government-to-Government Relations with Native American Tribal Governments (59 FR 22951), E.O. 13175, and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes.

We have determined that there are no Tribal lands occupied at the time of listing that contain the features essential for the conservation of, and no Tribal lands that are essential for the conservation of, these eight species. Therefore, we have not proposed designation of critical habitat for any of the eight species on Tribal lands.

Energy Supply, Distribution, or Use

On May 18, 2001, the President issued an Executive Order (E.O. 13211; Actions Concerning Regulations That Significantly Affect Energy Supply,

Distribution, or Use) on regulations that significantly affect energy supply, distribution, and use. E.O. 13211 requires agencies to prepare Statements of Energy Effects when undertaking certain actions. We do not expect the designation of critical habitat for the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, or fuzzy pigtoe to significantly affect energy supplies, distribution, or use. Although one of the proposed units is below hydropower reservoirs, current and proposed operating regimes have been deemed adequate for the species, and therefore their operations will not be affected by the proposed listing or designation of critical habitat. As discussed in the ''Summary of Factors Affecting the Species'' section, there is a large concentration of oil wells located in Conecuh and Escambia Counties, Alabama. Although this activity primarily affects Units AP2 and GCM1, we do not believe it is a significant threat to the species discussed in this rule. All other proposed units are remote from energy supply, distribution, or use activities. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required. However, we will further evaluate this issue as we conduct our economic analysis, and review and revise this assessment as warranted.

References Cited

A complete list of references cited is available on the Internet at *http://www.regulations.gov* and upon request from the Panama City Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Author(s)

The primary author of this package is Sandra Pursifull of the Panama City, FL, Fish and Wildlife Field Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

2. Amend § 17.11(h) by adding:

''bean, Choctaw,'' ''ebonyshell, round,'' ''kidneyshell, southern,'' ''pearlshell, Alabama'', ''pigtoe, fuzzy'', ''pigtoe, narrow'', ''pigtoe, tapered'', and ''sandshell, southern'' in alphabetical order under ''CLAMS'' to the List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
* *	*	*	*		*	*	
CLAMS							
* *	*	*	*		*	*	
bean, Choctaw	*Villosa choctawensis*	U.S.A. (AL, FL)	NA	E		17.95(f)	NA
* *	*	*	*		*	*	
ebonyshell, round	*Fusconaia rotulata*	U.S.A. (AL, FL)	*NA*	E		17.95(f)	*NA*
* *	*	*	*		*	*	
kidneyshell, southern	*Ptychobranchus jonesi*	U.S.A. (AL, FL)	NA	E		17.95(f)	NA
* *	*	*	*		*	*	
pearlshell, Alabama	*Margaritifera marrianae*	U.S.A. (AL)	NA	E		17.95(f)	NA
* *	*	*	*		*	*	
pigtoe, fuzzy	*Pleurobema strodeanum*	U.S.A. (AL, FL)	NA	T		17.95(f)	NA
* *	*	*	*		*	*	
pigtoe, narrow	*Fusconaia escambia*	U.S.A. (AL, FL)	NA	T		17.95(f)	NA
* *	*	*	*		*	*	
pigtoe, tapered	*Fusconaia burkei*	U.S.A. (AL, FL)	NA	T		17.95(f)	NA
* *	*	*	*		*	*	
sandshell, southern	*Hamiota australis*	U.S.A. (AL, FL)	NA	E		17.95(f)	NA
* *	*	*	*		*	*	

3. In § 17.95, amend paragraph (f) by adding an entry for ''eight mussel species in four northeastern Gulf of Mexico drainages'' and in the same alphabetical order that the species appears in the table at § 17.11(h), to read as follows:

§ 17.95 Critical habitat—fish and wildlife.

* * * * *

(f) *Clams and Snails.*

* * * * *

Eight mussel species in three northeast Gulf of Mexico drainages: the Choctaw bean (*Villosa choctawensis*), round ebonyshell (*Fusconaia rotulata*), southern kidneyshell (*Ptychobranchus jonesi*), Alabama pearlshell (*Margaritifera marrianae*), fuzzy pigtoe (*Pleurobema strodeanum*), narrow pigtoe (*Fusconaia escambia*), tapered pigtoe (*Fusconaia burkei*), and southern sandshell (*Hamiota australis*).

(1) Critical habitat units are designated in the following counties:

(i) Alabama. Barbour, Bullock, Butler, Coffee, Conecuh, Covington, Crenshaw, Dale, Escambia, Geneva, Henry, Houston, Monroe, and Pike Counties.

(ii) Florida. Bay, Escambia, Holmes, Jackson, Okaloosa, Santa Rosa, Walton, and Washington Counties.

(2) The primary constituent elements of critical habitat for the Alabama pearlshell, round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe are:

(i) Geomorphically stable stream and river channels and banks (channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation.

(ii) Stable substrates of sand or mixtures of sand with clay or gravel with low to moderate amounts of fine sediment and attached filamentous algae.

(iii) A hydrologic flow regime (the magnitude, frequency, duration, and seasonality of discharge over time) necessary to maintain benthic habitats where the species are found; and to maintain connectivity of rivers with the floodplain, allowing the exchange of nutrients and sediment for habitat maintenance, food availability, and spawning habitat for native fishes.

(iv) Water quality, including temperature (not greater than 32 °C), pH (between 6.0 to 8.5), oxygen content (not less than 5.0 mg/L), hardness, turbidity, and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages.

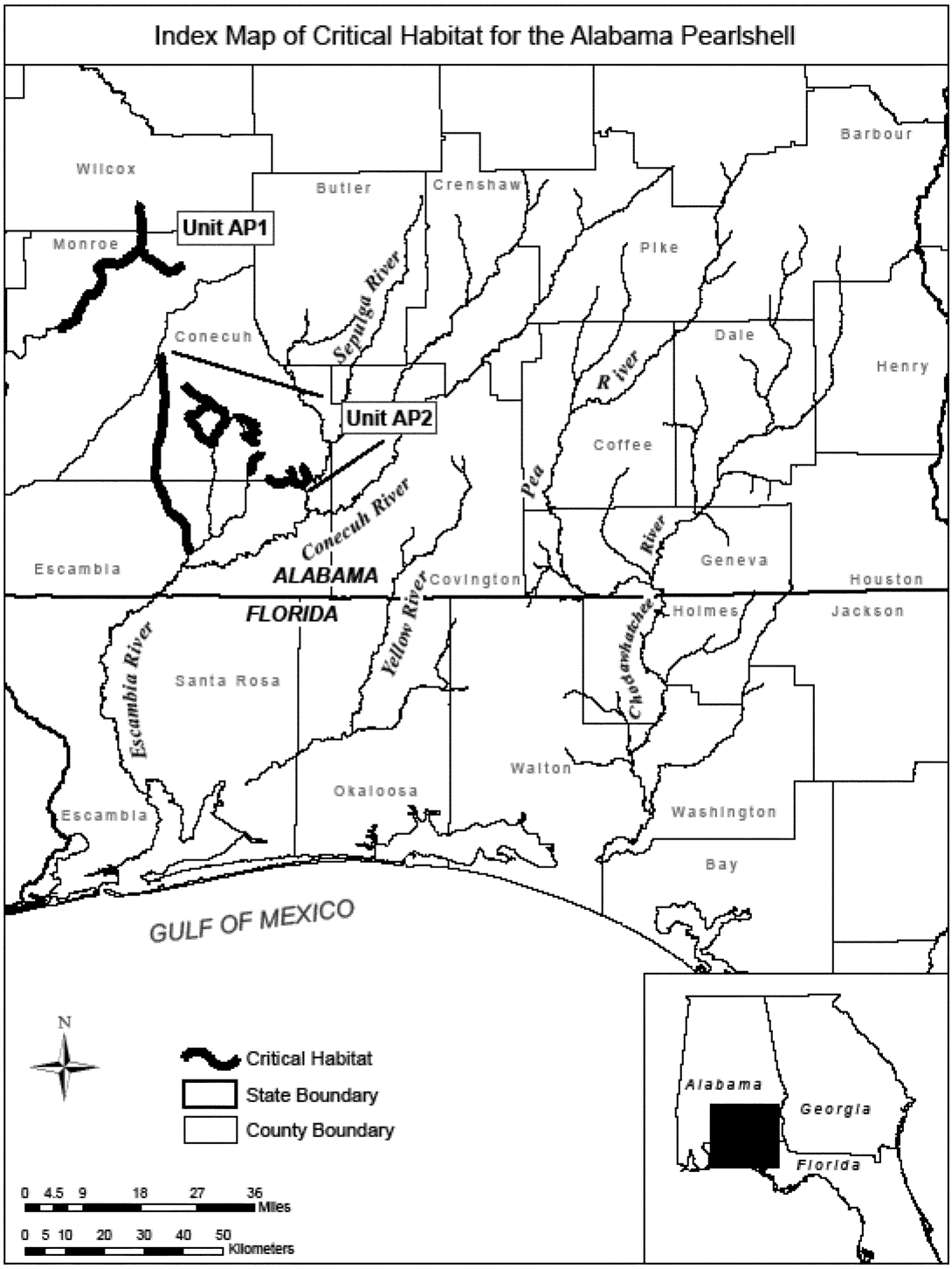
(v) The presence of fish hosts. Diverse assemblages of native fish species will serve as a potential indication of host fish presence until appropriate host fishes can be identified. For the fuzzy pigtoe and tapered pigtoe, the presence of blacktail shiner (*Cyprinella venusta*) will serve as a potential indication of fish host presence.

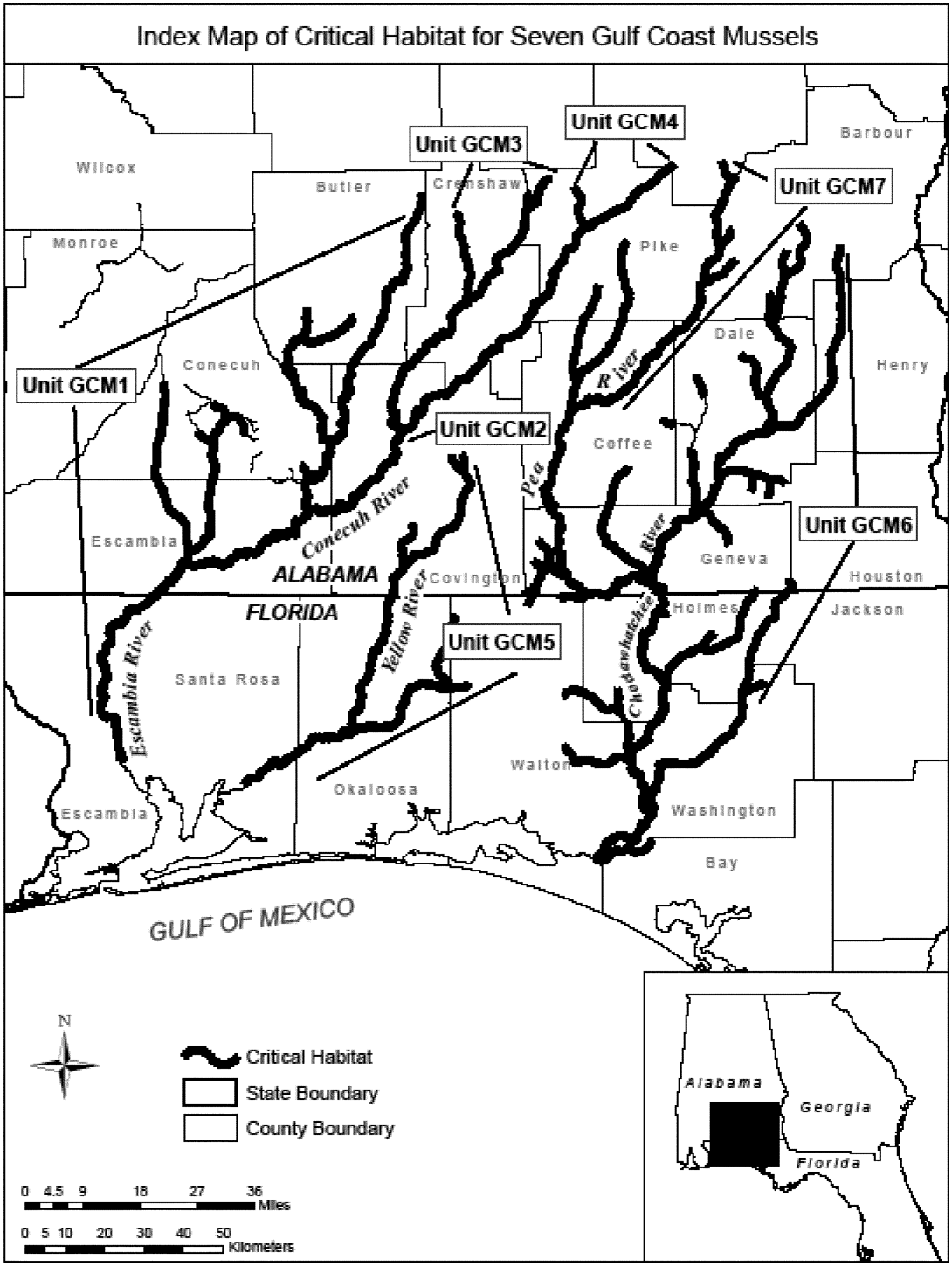
(3) Critical habitat does not include manmade structures (such as buildings, aqueducts, runways, dams, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on the effective date of this rule, with the exception of the impoundments created by Point A and Gantt Lake dams (impounded water, not the actual dam structures).

(4) *Critical habitat map units.* Data layers defining map units were created with USGS National Hydrography Dataset (NHD) GIS data. The 1:100,000 river reach (route) files were used to calculate river kilometers and miles. ESRIs ArcGIS 9.3.1 software was used to determine longitude and latitude coordinates using decimal degrees. The projection used in mapping all units was Universal Transverse Mercator (UTM), NAD 83, Zone 16 North. The following data sources were referenced to identify features (like roads and streams) used to delineate the upstream and downstream extents of critical habitat units: NHD data, Washington County USFWS National Wetlands Inventory, 1999 Florida Department of Transportation Roads Characteristics Inventory (RCI) dataset, U.S. Census Bureau 2000 TIGER line waterbody data, ESRIs World Street Map Service, Florida Department of Transportation General Highway Maps, DeLorme Atlas and Gazetteers, and USGS 7.5 minute topographic maps.

(5) *Note:* Index map of critical habitat units for the Alabama pearlshell, and index map of critical habitat units for the round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, narrow pigtoe, and fuzzy pigtoe follows:

BILLING CODE 4310–55–P


Index Map of Critical Habitat for the Alabama Pearlshell
Wilcox
Butler
Crenshaw
Barbour
Monroe
Unit AP1
Pike
Sepulga River
Conecuh
Dale
Henry
Unit AP2
Coffee
Pea River
Conecuh River
Escambia
ALABAMA
Covington
Geneva
Houston
FLORIDA
Holmes
Jackson
Escambia River
Santa Rosa
Yellow River
Choctawhatchee
Walton
Okaloosa
Escambia
Washington
Bay
GULF OF MEXICO
N
Critical Habitat
State Boundary
County Boundary
0 4.5 9 18 27 36 Miles
0 5 10 20 30 40 50 Kilometers
Alabama
Georgia
Florida



(6) Unit AP1: Big Flat Creek Drainage, Monroe and Wilcox Counties, AL. This unit is critical habitat for the Alabama pearlshell.

(i) The unit includes the mainstem of Big Flat Creek from Hwy 41 upstream 56 km (35 mi), Monroe County, AL; Flat Creek from its confluence with Big Flat Creek upstream 20 km (12 mi), Monroe County, AL; and Dailey Creek from its confluence Flat Creek upstream 17 km (11mi), Monroe and Wilcox Counties, AL.

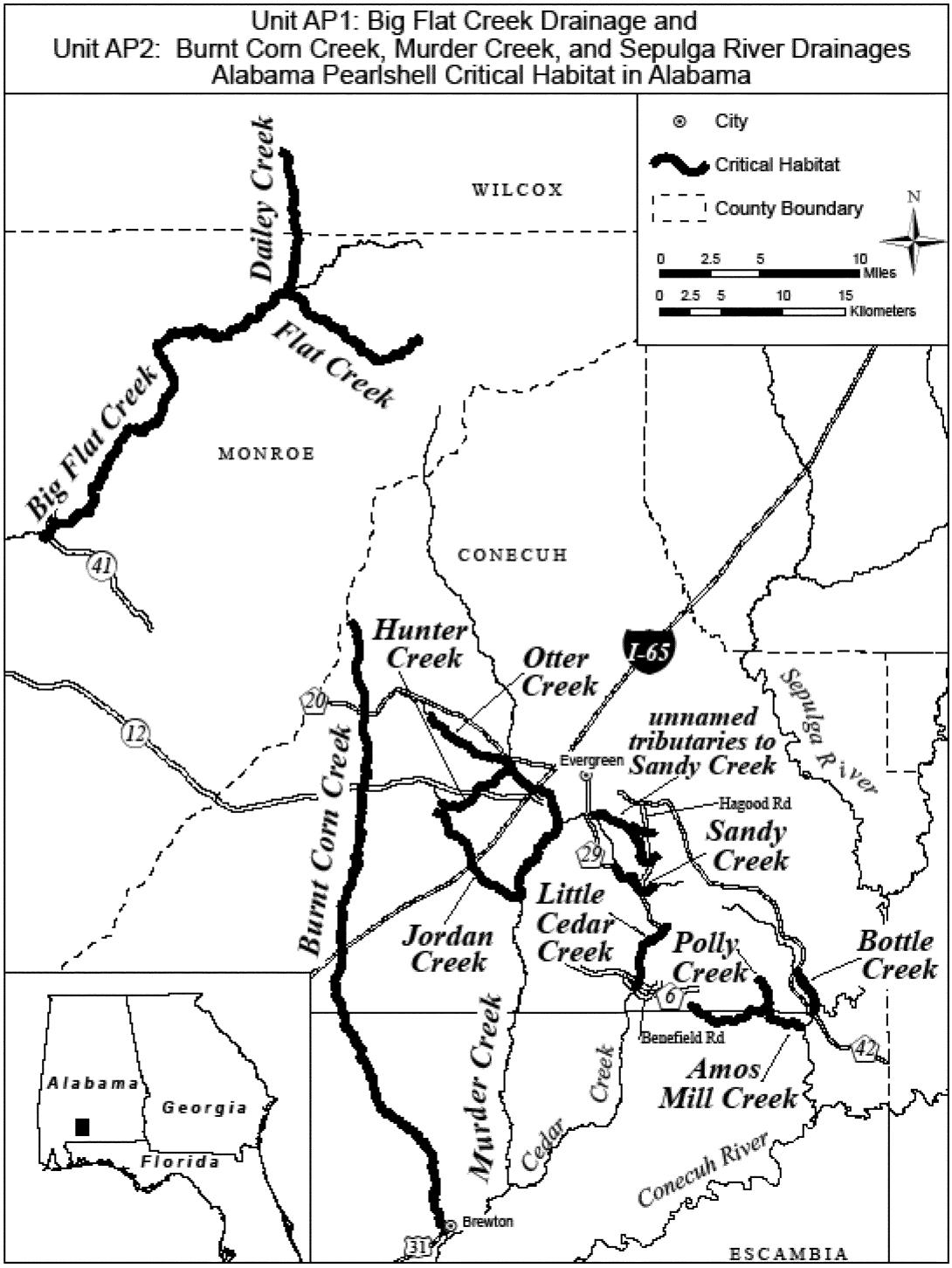
(ii) *Note:* Map of Unit AP1, Big Flat Creek Drainage, and Unit AP2, Burnt Corn Creek, Murder Creek, and Sepulga River Drainages, are combined and follows the Unit AP2 description.

(7) Unit AP2: Burnt Corn Creek, Murder Creek, and Sepulga River Drainages, Escambia and Conecuh Counties, AL. This unit is critical habitat for the Alabama pearlshell.

(i) The unit includes the mainstem of Burnt Corn Creek from its confluence with Murder Creek upstream 66 km (41 mi), Conecuh County, AL; the mainstem of Murder Creek from its confluence with Jordan Creek upstream 17 km (11 mi) to the confluence of Otter Creek, Conecuh County, AL; Jordan Creek from its confluence with Murder Creek upstream 12 km (7 mi), Conecuh County, AL; Otter Creek from its confluence with Murder Creek,

upstream 9 km (5.5 mi), Conecuh County, AL; Hunter Creek from its confluence with Murder Creek upstream 8 km (5 mi), Conecuh County, AL; Sandy Creek from County Road 29 upstream 5 km (3.5 mi), Conecuh County, AL; two unnamed tributaries to Sandy Creek—one from its confluence with Sandy Creek upstream 8.5 km (5.0 mi) to just above Hagood Road and the other from it confluence with the previous unnamed tributary upstream 2.5 km (1.5 mi) to just above Hagood Road; Little Cedar Creek from County Road 6 upstream 8 km (5 mi), Conecuh County, AL; Amos Mill Creek from its confluence with the Sepulga River upstream 12 km (8 mi), Escambia and Conecuh Counties, AL; Polly Creek from its confluence with Amos Mill Creek upstream 3 km (2 mi), Conecuh County, AL; and Bottle Creek from its confluence with the Sepulga River upstream 5.5 km (3.5 mi) to County Road 42, Conecuh County, AL.

(ii) *Note:* Map of Unit AP1, Big Flat Creek Drainage, and Unit AP2, Burnt Corn Creek, Murder Creek, and Sepulga River Drainages, follows:



(8) Unit GCM1: Lower Escambia River Drainage in Escambia and Santa Rosa Counties, FL, and Escambia, Covington, Conecuh, and Butler Counties, AL. This unit is critical habitat for the round ebonyshell, southern sandshell, southern kidneyshell, Choctaw bean, narrow pigtoe, and fuzzy pigtoe.

(i) The unit includes the Escambia-Conecuh River mainstem from the confluence of Spanish Mill Creek Escambia and Santa Rosa Counties, FL upstream 204 km (127 mi) to the Point A Lake dam, Covington County, AL; Murder Creek from its confluence with the Conecuh River, Escambia County, AL upstream 62 km (38 mi) to the confluence of Cane Creek, Conecuh County, AL; Burnt Corn Creek from its confluence with Murder Creek, Escambia County, AL, upstream 59 km (37 mi) to County Road 20, Conecuh County, AL; Jordan Creek from its confluence with Murder Creek, upstream 5.5 km (3.5 mi) to Interstate 65, Conecuh County, AL; Mill Creek from its confluence with Murder Creek upstream 2.5 km (1.5 mi) to the confluence of Sandy Creek, Conecuh County, AL; Sandy Creek from its confluence with Mill Creek upstream 5.5 km (3.5 mi) to County Road 29, Conecuh County, AL; Sepulga River from its confluence with the Conecuh River upstream 69 km (43 mi) to the confluence of Persimmon Creek, Conecuh County, AL; Bottle Creek from its confluence with the Sepulga River upstream 5.5 km (3.5 mi) to County Road 42, Conecuh County, AL; Persimmon Creek from its confluence with the Sepulga River, Conecuh County upstream 36 km (22 mi) to the confluence of Mashy Creek, Butler County, AL; Panther Creek from its confluence with Persimmon Creek upstream 11 km (7 mi) to State Route 106, Butler County, AL; Pigeon Creek from its confluence with the Sepulga River, Conecuh and Covington Counties upstream 89 km (55 mi) to the confluence of Three Run Creek, Butler County, AL; and Three Run Creek from its confluence with Pigeon Creek upstream 9 km (5.5 mi) to the confluence of Spring Creek, Butler County, AL.

(ii) *Note:* Map of Unit GCM1, Lower Escambia River, follows (to preserve detail, the map is divided into south and north sections):

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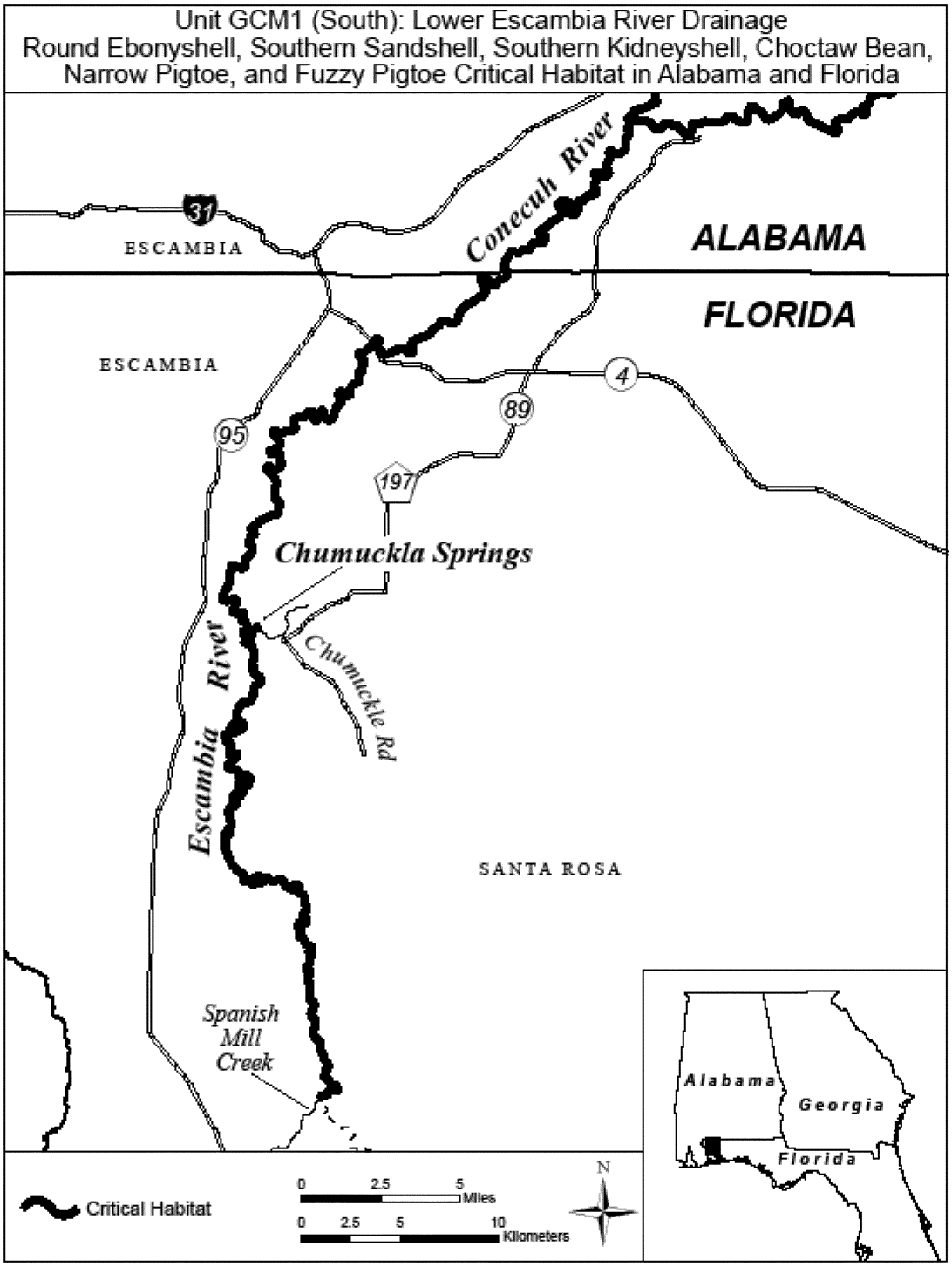
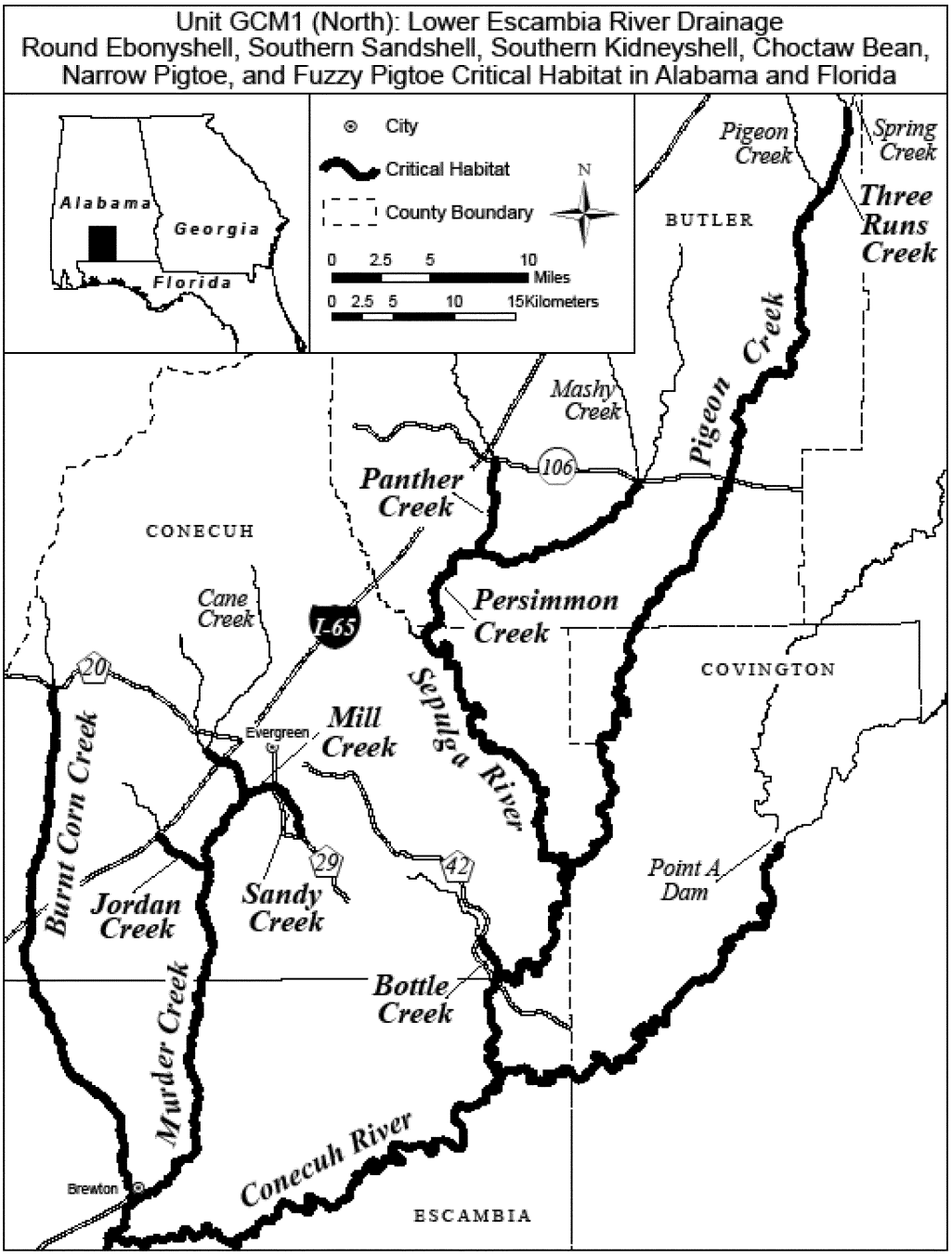
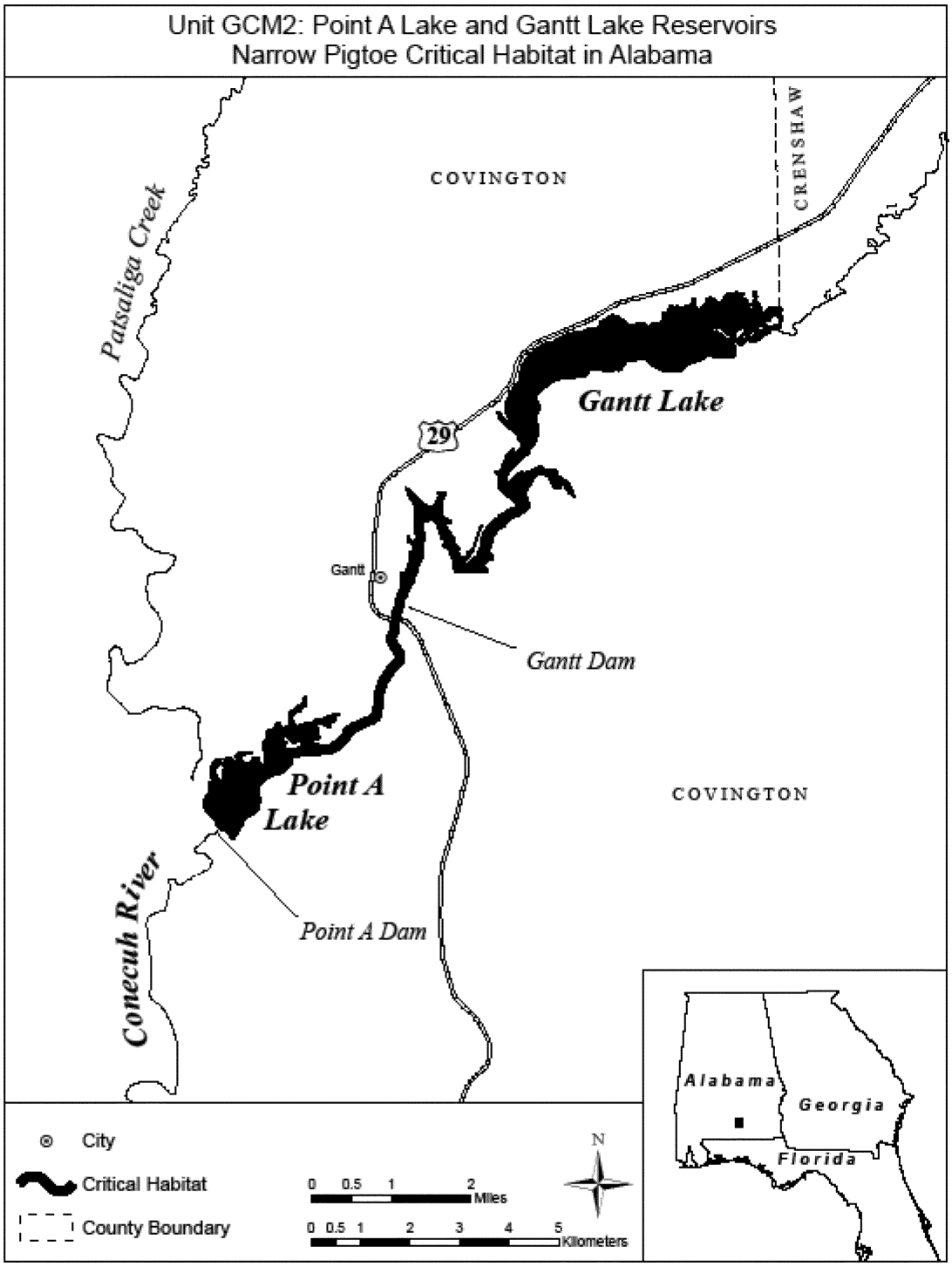

Unit GCM1 (South): Lower Escambia River Drainage
Round Ebonyshell, Southern Sandshell, Southern Kidneyshell, Choctaw Bean, Narrow Pigtoe, and Fuzzy Pigtoe Critical Habitat in Alabama and Florida
Conecuh River
ALABAMA
FLORIDA
ESCAMBIA
ESCAMBIA
31
4
89
95
197
Chumuckla Springs
Chumuckle Rd
Escambia River
SANTA ROSA
Spanish Mill Creek
Critical Habitat
0 2.5 5 Miles
0 2.5 5 10 Kilometers
N
Alabama
Georgia
Florida



(9) Unit GCM2: Point A Lake and Gantt Lake Reservoirs in Covington County, AL. This unit is critical habitat for the narrow pigtoe.

(i) The unit extends from Point A Dam, Covington County, upstream 21 km (13 mi) to the Covington-Crenshaw County line, AL.

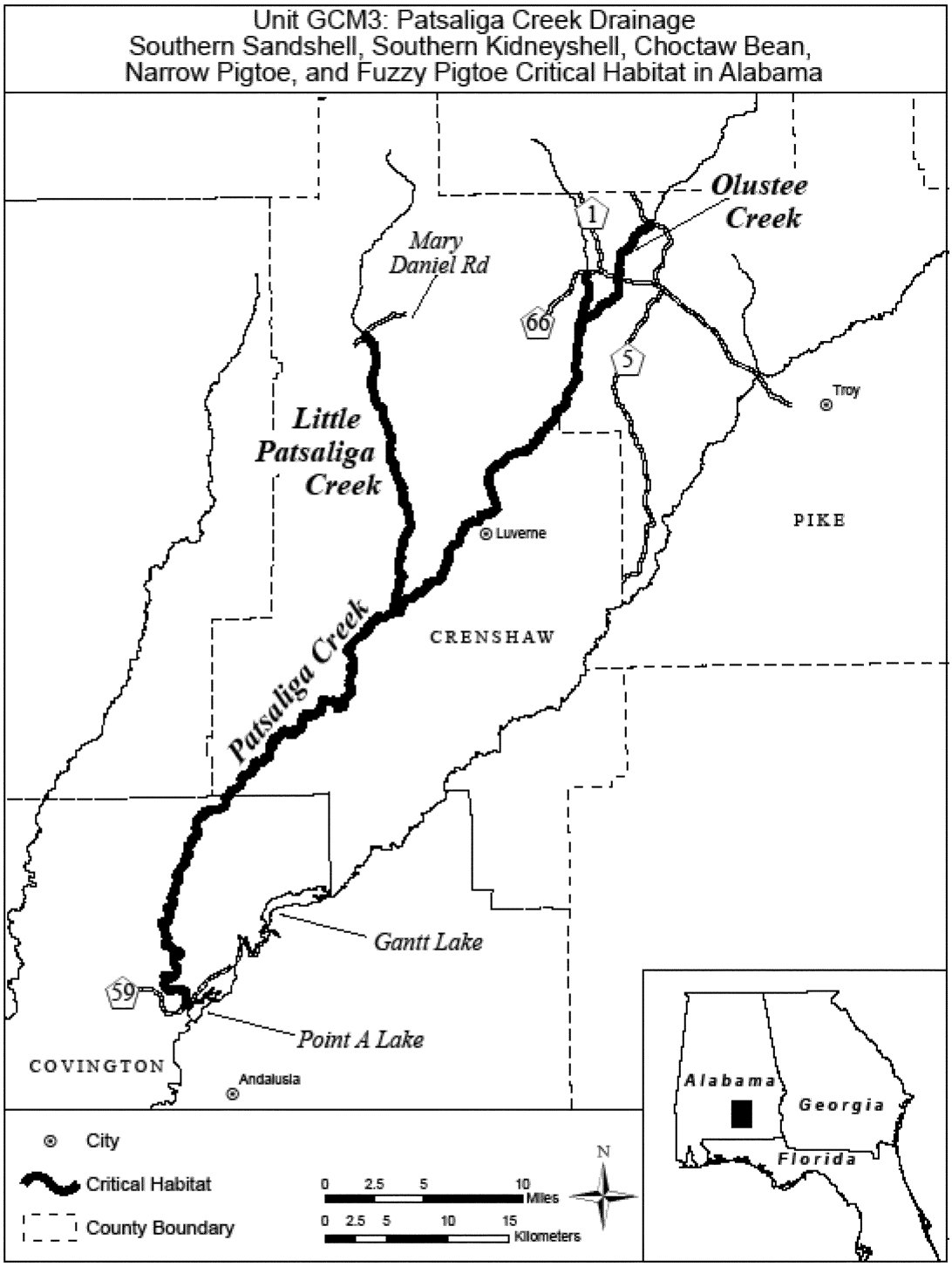
(ii) *Note:* Map of Unit GCM2, Point A Lake and Gantt Lake Reservoirs, follows:



(10) Unit GCM3: Patsaliga Creek Drainage in Covington, Crenshaw, and Pike Counties, AL. The Patsaliga Creek drainage is within the Escambia River basin. This unit is critical habitat for the southern sandshell, southern kidneyshell, Choctaw bean, narrow pigtoe, and fuzzy pigtoe.

(i) The unit includes Patsaliga Creek from its confluence with Point A Lake at County Road 59, Covington County, AL, upstream 108 km (67 mi) to Crenshaw County Road 66–Pike County Road 1, AL; Little Patsaliga Creek from its confluence with Patsaliga Creek upstream 28 km (17 mi) to Mary Daniel Road, Crenshaw County, AL; and Olustee Creek from its confluence with Patsaliga Creek upstream 12 km (8 mi) to County Road 5, Pike County, AL.

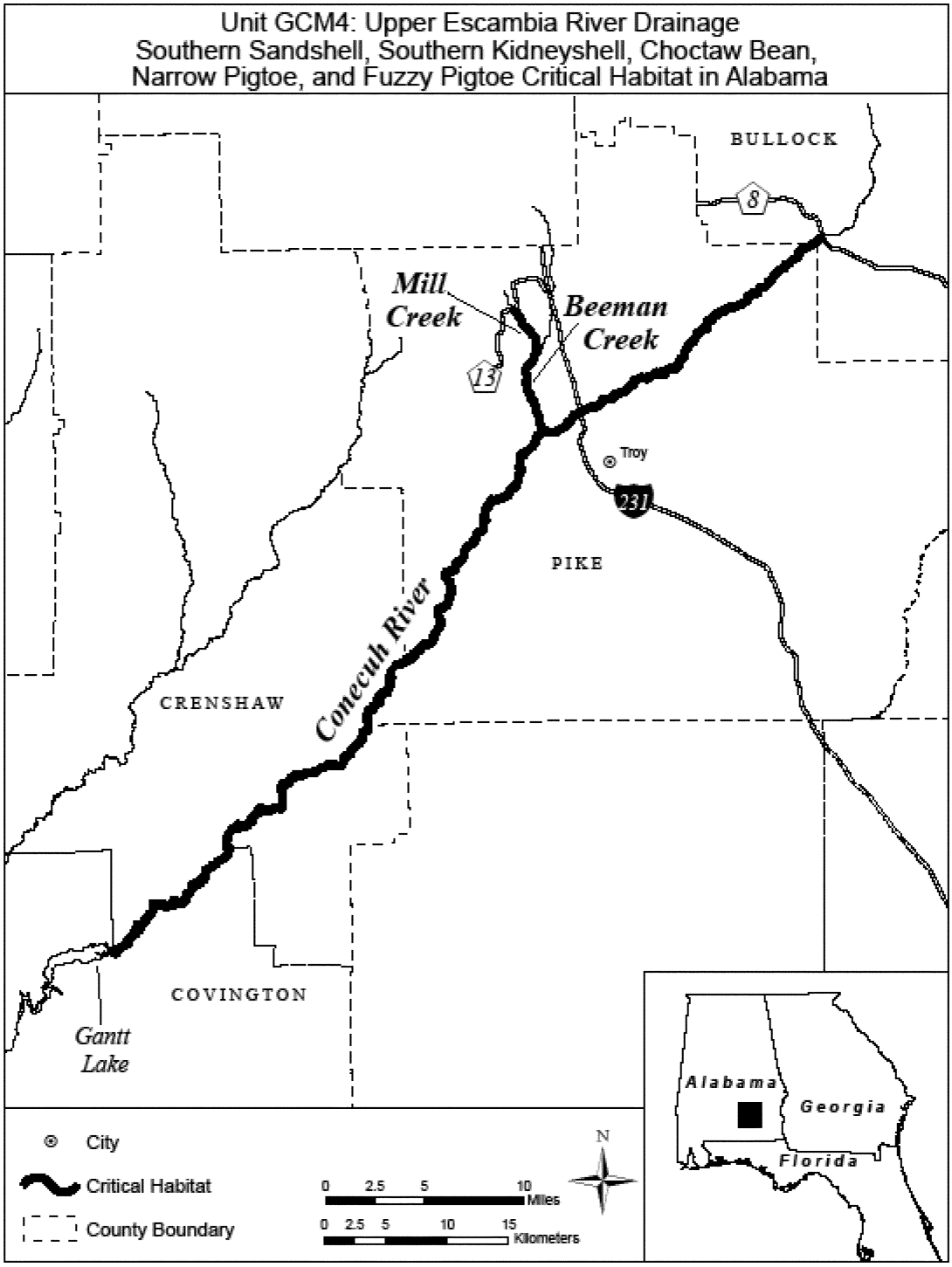
(ii) *Note:* Map of Unit GCM3, Patsaliga Creek Drainage follows:



(11) Unit GCM4: Upper Escambia River Drainage in Covington, Crenshaw, Pike, and Bullock Counties, AL. This unit is critical habitat for the southern sandshell, southern kidneyshell, Choctaw bean, narrow pigtoe, and fuzzy pigtoe.

(i) The unit includes the Conecuh River from its confluence with Gantt Lake reservoir at the Covington-Crenshaw County line upstream 126 km (78 mi) to County Road 8, Bullock County, AL; Beeman Creek from its confluence with the Conecuh River upstream 6.5 km (4 mi) to the confluence of Mill Creek, Pike County, AL; and Mill Creek from its confluence with Beeman Creek, upstream 4.5 km (3 mi) to County Road 13, Pike County, AL.

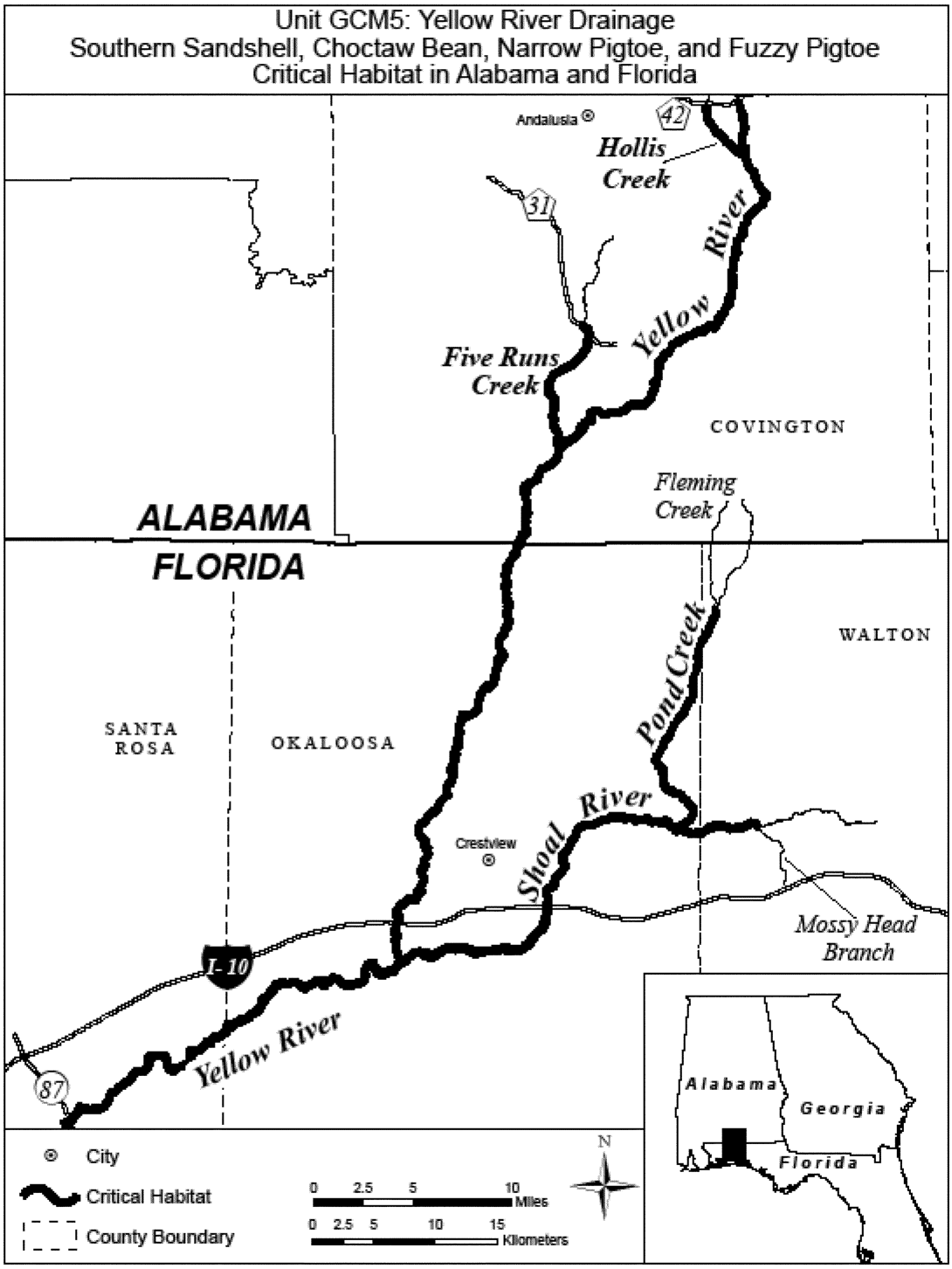
(ii) *Note:* Map of Unit GCM 4, Upper Escambia River Drainage, follows:



(12) Unit GCM5: Yellow River Drainage in Santa Rosa, Okaloosa, and Walton Counties, FL; and Covington County, AL. This unit is critical habitat for the southern sandshell, Choctaw bean, narrow pigtoe, and fuzzy pigtoe.

(i) The unit includes the Yellow River mainstem from the confluence of Weaver River, (a distributary located 0.9 km (0.6 mi) downstream of State Route 87), Santa Rosa County, FL, upstream 157 km (97 mi) to County Road 42, Covington County, AL; the Shoal River mainstem from its confluence with the Yellow River upstream 51 km (32 mi) to the confluence of Mossy Head Branch, Walton County, FL; Pond Creek from its confluence with the Shoal River upstream 24 km (15 mi) to the confluence of Fleming Creek, Walton County, FL; Five Runs Creek from its confluence with the Yellow River upstream 15 km (9.5 mi) to County Road 31, Covington County, AL; and Hollis Creek from its confluence with the Yellow River upstream 5.5 km (3.5 mi) to County Road 42, Covington County, AL.

(ii) *Note:* Map of Unit GCM5, Yellow River Drainage, follows:



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(13) Unit GCM6: Choctawhatchee River and Lower Pea River Drainages in Walton, Washington, Bay, Holmes, and Jackson Counties, FL; and Geneva, Coffee, Dale, Houston, Henry, Pike, and Barbour Counties, AL. This unit is critical habitat for the southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, and fuzzy pigtoe.

(i) The unit includes the Choctawhatchee River mainstem from the confluence of Pine Log Creek, Walton County, FL upstream 200 km (125 mi) to the point the river splits into the West Fork Choctawhatchee and East Fork Choctawhatchee Rivers, Barbour County, AL; Pine Log Creek from its confluence with the Choctawhatchee River, Walton County upstream 19 km (12 mi) to Ditch Branch, Washington and Bay Counties, FL; an unnamed channel forming Cowford Island from its downstream confluence with the Choctawhatchee River upstream 3 km (2 mi) to its upstream confluence with the river, Washington County, FL; Crews Lake from its western terminus 1.5 km (1 mi) to its eastern terminus, Washington County, FL (Crews Lake is a relic channel southwest of Cowford Island, and is disconnected from the Cowford Island channel, except during high flows); Holmes Creek from its

confluence with the Choctawhatchee River, Washington County, FL upstream 98 km (61 mi) to County Road 4, Geneva County, AL; Alligator Creek from its confluence with Holmes Creek upstream 6.5 km (4 mi) to County Road 166, Washington County, FL; Bruce Creek from its confluence with the Choctawhatchee River upstream 25 km (16 mi) to the confluence of an unnamed tributary, Walton County, FL; Sandy Creek from its confluence with the Choctawhatchee River, upstream 30 km (18 mi) to the confluence of West Sandy Creek, Holmes and Walton Counties, FL; Blue Creek from its confluence with Sandy Creek, upstream 7 km (4.5 mi) to the confluence of Goose Branch, Holmes County, FL; West Sandy Creek from its confluence with Sandy Creek, upstream 5.5 km (3.5 mi) to the confluence of an unnamed tributary, Walton County, FL; Wrights Creek from its confluence with the Choctawhatchee River, Holmes County, FL, upstream 43 km (27 mi) to County Road 4, Geneva County, AL; Tenmile Creek from its confluence with Wrights Creek upstream 6 km (3.5 mi) to the confluence of Rice Machine Branch, Holmes County, FL; West Pittman Creek from its confluence with the Choctawhatchee River, upstream 6.5 km (4 mi) to Fowler Branch, Holmes County, FL; East Pittman Creek from its confluence with the Choctawhatchee River upstream 4.5 km (3 mi) to County Road 179, Holmes County, FL; Parrot Creek from its confluence with the Choctawhatchee River upstream 6 km (4 mi) to Tommy Lane, Holmes County, FL; the Pea River from its confluence with the Choctawhatchee River, Geneva County upstream 91 km (57 mi) to the Elba Dam, Coffee County, AL; Limestone Creek from its confluence with the Pea River upstream 8.5 km (5 mi) to Woods Road, Walton County, FL; Flat Creek from the Pea River upstream 17 km (10 mi) to the confluence of Panther Creek, Geneva County, AL; Eightmile Creek from its confluence with Flat Creek, Geneva County, AL upstream 15 km (9 mi) to the confluence of Dry Branch (first tributary upstream of County Road 181), Walton County, FL; Corner Creek from its confluence with Eightmile Creek, upstream 5 km (3 mi) to State Route 54, Geneva County, AL; Natural Bridge Creek from its confluence with Eightmile Creek, Geneva County, AL, upstream 4 km (2.5 mi) to the Covington-Geneva County line, AL; Double Bridges Creek from the Choctawhatchee River, Geneva County upstream 46 km (29 mi) to the confluence of Blanket Creek, Coffee County, AL; Claybank Creek from the Choctawhatchee River, Geneva County upstream 22 km (14 mi) to the Fort Rucker military reservation southern boundary, Dale County, AL; Claybank Creek from the Fort Rucker military reservation northern boundary, upstream 6 km (4 mi) to County Road 36, Dale County, AL; Steep Head Creek from the Fort Rucker military reservation western boundary, upstream 4 km (2.5 mi) to County Road 156, Coffee County, AL; Hurricane Creek from its confluence with the Choctawhatchee River upstream 14 km (8.5 mi) to State Route 52, Geneva County, AL; Little Choctawhatchee River from its confluence with the Choctawhatchee River, Dale and Houston Counties upstream 20 km (13 mi) to the confluence of Newton Creek, Houston County, AL; Panther Creek from its confluence with Little Choctawhatchee River, upstream 4.5 km (2.5 mi) to the confluence of Gilley Mill Branch, Houston County, AL; Bear Creek from its confluence with the Little Choctawhatchee River, upstream 5.5 km (3.5 mi) to County Road 40 (Fortner Street), Houston County, AL; West Fork Choctawhatchee River from its confluence with the Choctawhatchee River, Dale County upstream 54 km (33 mi) to the fork of Pauls Creek and Lindsey Creek, Barbour County, AL; Judy Creek from its confluence with West Fork Choctawhatchee River upstream 17 km (11 mi) to County Road 13, Dale County, AL; Sikes Creek from its confluence with West Fork Choctawhatchee River Dale County upstream 8.5 km (5.5 mi) to State Route 10, Barbour County, AL; Pauls Creek from its confluence with West Fork Choctawhatchee River upstream 7 km (4.5 mi) to one mile upstream of County Road 20, Barbour County, AL; Lindsey Creek from its confluence with West Fork Choctawhatchee River upstream 14 km (8.5 mi) to the confluence of an unnamed tributary, Barbour County, AL; an unnamed tributary to Lindsey Creek from its confluence with Lindsey Creek upstream 2.5 km (1.5 mi) to 1.0 mile upstream of County Road 53, Barbour County, AL; and East Fork Choctawhatchee River from its confluence with Choctawhatchee River, Dale County upstream 71 km (44 mi) to County Road 71, Barbour County, AL.

(ii) *Note:* Map of Unit GCM6, Choctawhatchee River and Lower Pea River Drainages, follows (to preserve detail, the map is divided into south, central, and north sections):

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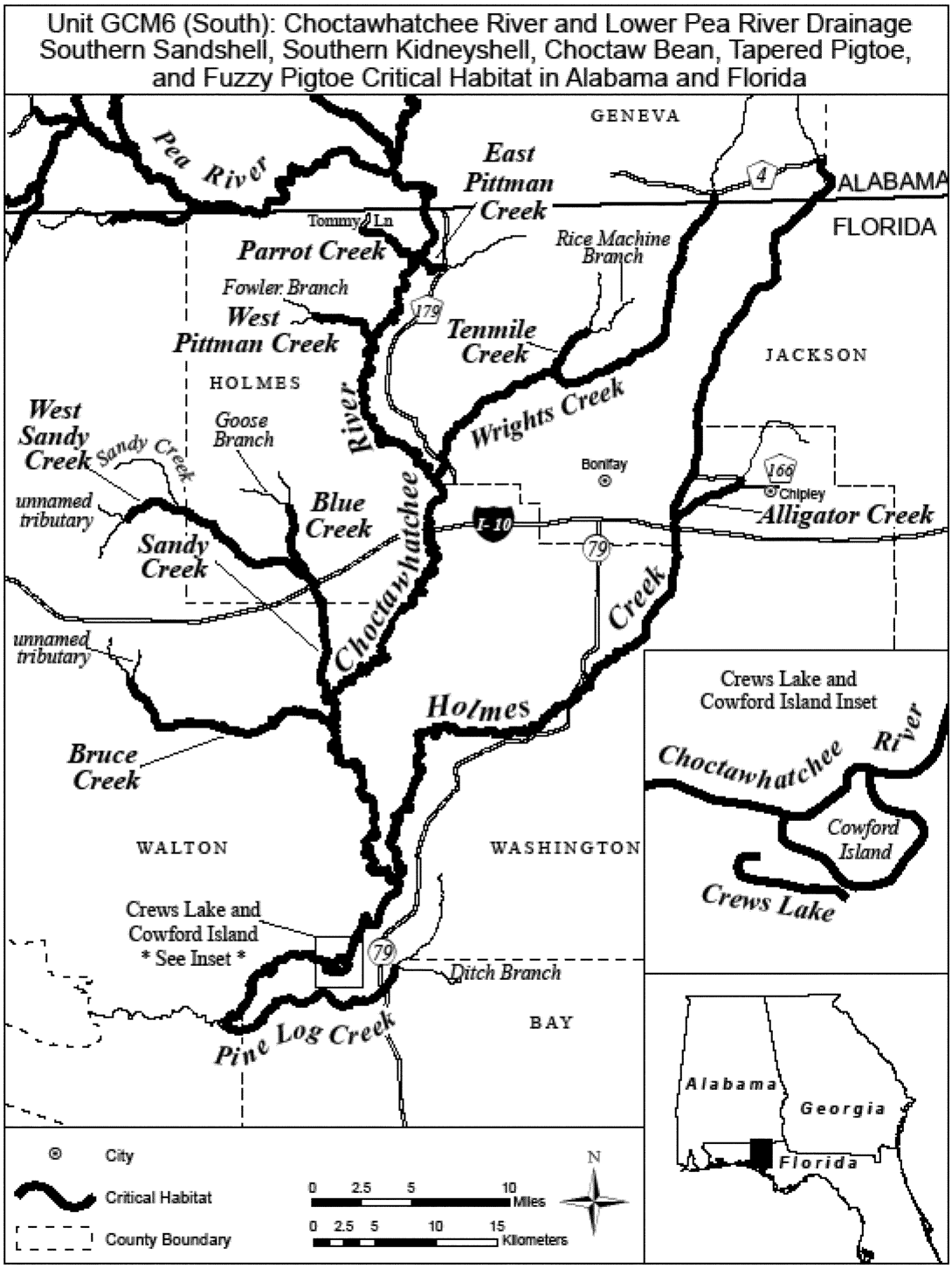
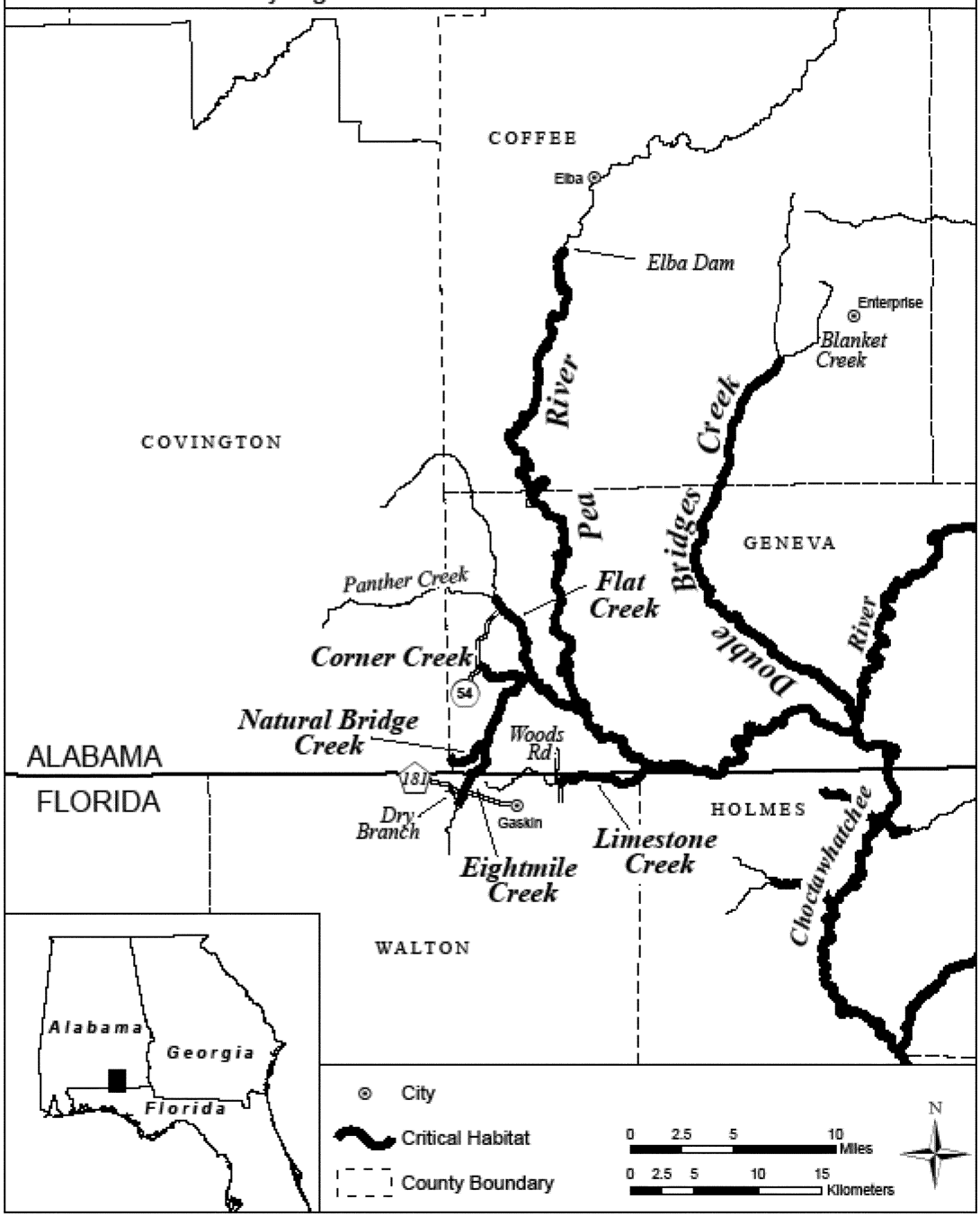
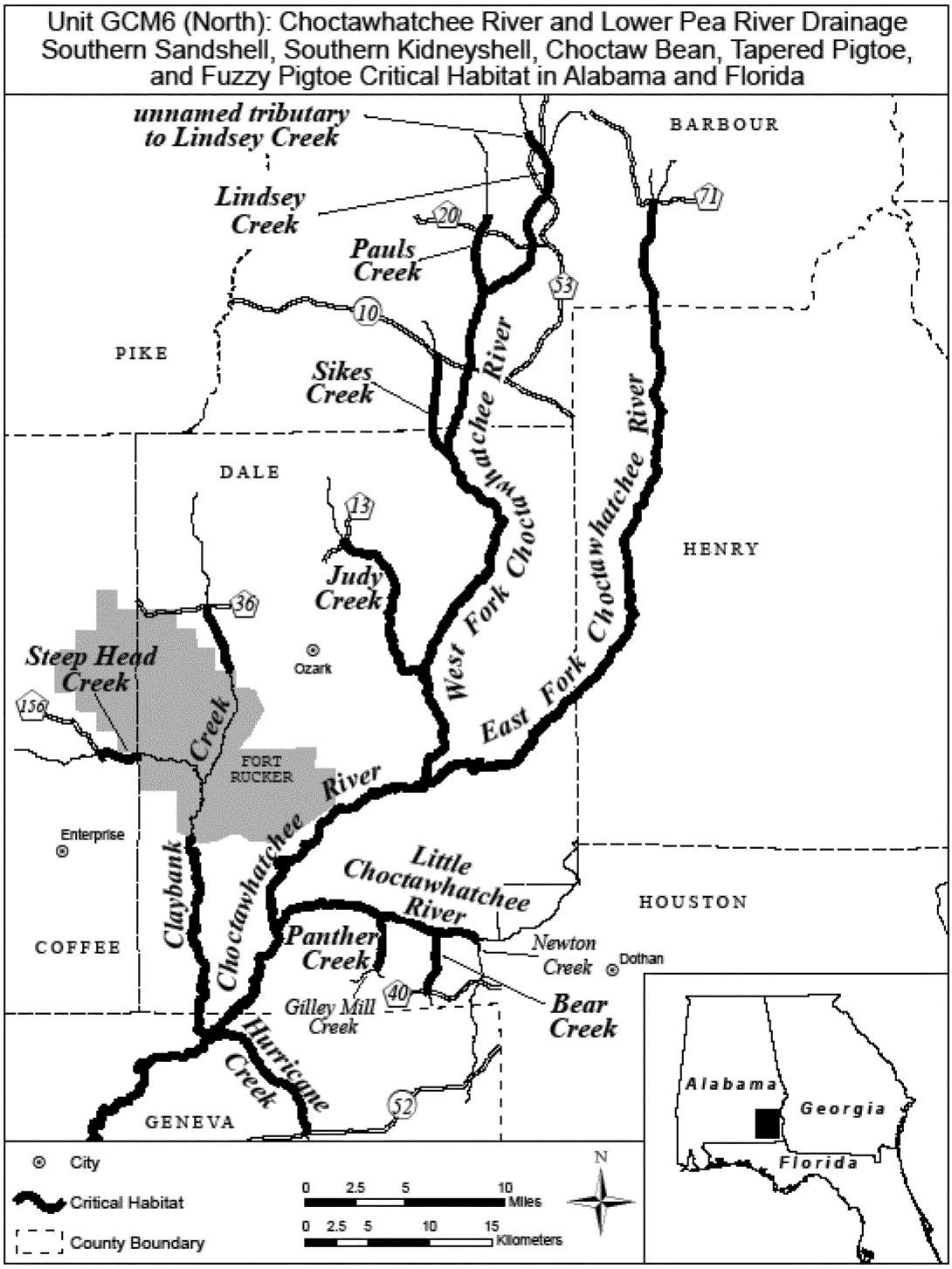

Unit GCM6 (South): Choctawhatchee River and Lower Pea River Drainage Southern Sandshell, Southern Kidneyshell, Choctaw Bean, Tapered Pigtoe, and Fuzzy Pigtoe Critical Habitat in Alabama and Florida
GENEVA
ALABAMA
FLORIDA
Pea River
East Pittman Creek
Tommy Ln
Parrot Creek
Rice Machine Branch
Fowler Branch
West Pittman Creek
Tenmile Creek
HOLMES
JACKSON
West Sandy Creek
Sandy Creek
Goose Branch
Wrights Creek
Bonifay
Chipley
Alligator Creek
unnamed tributary
Blue Creek
Sandy Creek
Choctawhatchee River
Holmes Creek
unnamed tributary
Bruce Creek
WALTON
WASHINGTON
Crews Lake and Cowford Island * See Inset *
Ditch Branch
Pine Log Creek
BAY
Crews Lake and Cowford Island Inset
Choctawhatchee River
Cowford Island
Crews Lake
Alabama
Georgia
Florida
City
Critical Habitat
County Boundary
0 2.5 5 10 Miles
0 2.5 5 10 15 Kilometers
N

Unit GCM6 (Central): Choctawhatchee River and Lower Pea River Drainage Southern Sandshell, Southern Kidneyshell, Choctaw Bean, Tapered Pigtoe, and Fuzzy Pigtoe Critical Habitat in Alabama and Florida



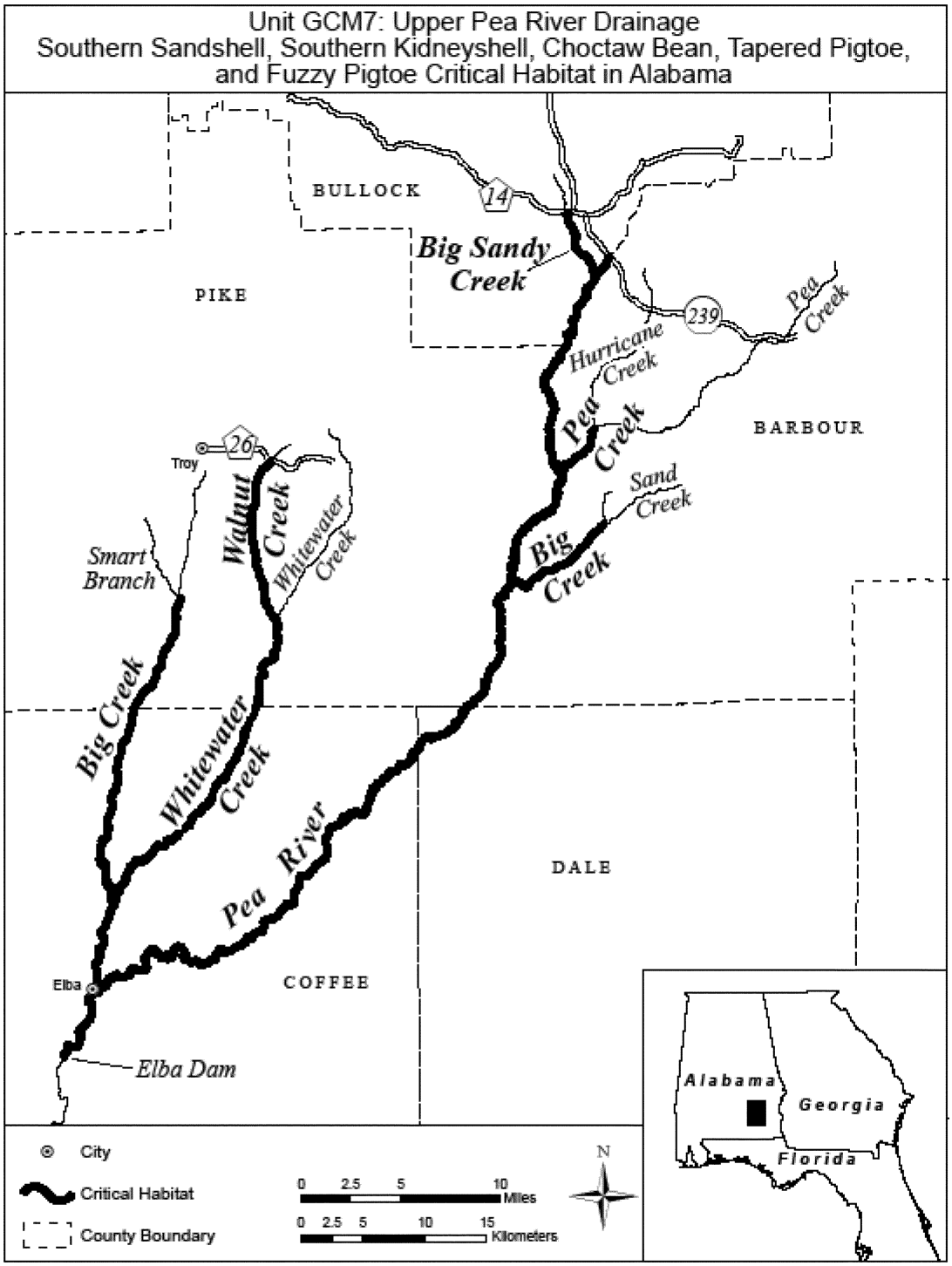


(16) Unit GCM7: Upper Pea River Drainage in Coffee, Dale, Pike, Barbour, and Bullock Counties, AL. The Pea River drainage is within the Choctawhatchee River Basin. This unit is critical habitat for the southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, and fuzzy pigtoe.

(i) The unit includes the Pea River mainstem from the Elba dam, Coffee County upstream 123 km (76 mi) to State Route 239, Bullock and Barbour Counties, AL; Whitewater Creek from its confluence with the Pea River, Coffee County upstream 45 km (28 mi) to the confluence of Walnut Creek, Pike County, AL; Walnut Creek from its confluence with Whitewater Creek upstream 14 km (9 mi) to County Road 26, Pike County, AL; Big Creek (Coffee County Big Creek) from its confluence with Whitewater Creek, Coffee County upstream 30 km (18 mi) to the confluence of Smart Branch, Pike County, AL; Big Creek (Barbour County Big Creek) from its confluence with the Pea River upstream 10 km (6 mi) to the confluence of Sand Creek, Barbour County, AL; Pea Creek from its confluence with the Pea River upstream 6 km (4 mi) to the confluence of Hurricane Creek, Barbour County, AL; and Big Sandy Creek from its confluence with the Pea River upstream

6.5 km (4 mi) to County Road 14, Bullock County, AL.

(ii) *Note:* Map of Unit GCM7, Upper Pea River Drainage, follows:



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Dated: September 7, 2011.

Rowan W. Gould,

Acting Director, U.S. Fish and Wildlife Service.

[FR Doc. 2011–24519 Filed 10–3–11; 8:45 am]

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